WORK PACKAGE

TECHNICAL PROCEDURES

# Stylistic LT P-600 Pen Tablet

EFFECTIVITY: DIGITAL COMPUTER SYSTEM AN/TYQ-88(V)15
PORTABLE FLIGHT PLANNING SUBSYSTEM

# LIST OF EFFECTIVE WP PAGES

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## REFERENCE MATERIALS REQUIRED

| Publication Number | Publication Title |
|---|---|
| WP 998 | Illustrated Parts Breakdown |
| TO 31S5-4-2768-91 | Stylistic LT P-600 Pen Tablet User's Guide |
| TO 31S5-4-2768-81 | Mini-Dock Installation Guide |

## CONSUMABLE MATERIALS

| Nomenclature | Specification/Part No. | CAGE Code |
|---|---|---|
| CD Disk Cleaner (Liquid) | N/A | N/A |
| CD-ROM Lens Cleaner (Dry Only) | NA/ | N/A |
| Soft Cloth | N/A | N/A |
| Mild Detergent | N/A | N/A |
| Stylus Pen Kit | N/A | N/A |
| Screen Protector | N/A | N/A |

## APPLICABLE SUPPORT EQUIPMENT

None

## FORWARD

This Work Package (WP) contains procedures for installation, operation, maintenance, and shipment of the digital Computer System AN/TYQ-88 (V)15 ACC Pen Tablet, herein called the Portable Flight Planning Subsystem (PFPS). This WP also contains a list of Equipment Supplied.

## SAFETY SUMMARY

Warnings, Cautions and Notes that appear in this WP precede the step containing the action that would initiate the unsafe condition. However, Notes may be placed either preceding a step that needs explanation or following a step where results need clarification.

## 1. EQUIPMENT REQUIRED

Table 1 lists the PFPS equipment supplied. Table 2 lists the equipment required for operation and maintenance of the PFPS but are not supplied with the PFPS.

The Pen Tablet System consists of the Stylistic LT P-600 and other components listed in Table 1.

*Table 1 PFPS Equipment Supplied*

| REFERENCE DESIGNATIONS | DESCRIPTION | QUANTITY/ SYSTEM | PART NO. |
|---|---|---|---|
| **(V)15** | Portable Flight Planning Subsystem AN/TYQ-88(V)15 (ACC - Pen Tablet) | | NAWCAD-VSTAR-EN-HH60G-V01 |
| | Slip Case Version 2 | 1 | VSTAR-CWW-0330 |
| | Case Wire Harness | 1 | VSTAR-WH-HH60G-02 |
| | A/C Wire Harness | 1 | VSTAR-WH-HH60G-01 |
| | Pen Tablet | 1 | CP098570-01 |
| | 40GB Hard Drive, installed | 1 | IDEHD-40G |
| | 40GB Hard Drive, replacement | 1 | IBM07N8327 |
| | Battery Pack | 3 | FPCBP48 |
| | External CD-ROM Drive | 1 | FPCCD19 |
| | CD-ROM Cable | 1 | NO NUMBER |
| | PCMCIA Card | 1 | NO NUMBER |
| | Floppy Drive | 1 | FPCFDD02 |
| | Mini-Dock Station | 1 | PCBR25 |
| | NAWCAD VSTAR (NVG Filter, part of Pen Tablet) | 1 | VSTAR-P600MOD-24773-002 |
| | Telephone Cord, 6 foot | 1 | NO NUMBER |
| | AC Adapter | 3 | CA01007-0870 |
| | AC Power Cord | 3 | NO NUMBER |
| | Ferrite Core | 1 | RFC-8 |
| | Ferrite Core | 1 | RFC-10 |
| | Serial Flashcard Adapter | 1 | SL2703-138 |
| | Battery Charger | 1 | FMW51BC2 |
| | Keyboard | 1 | FMWKB5A |
| | 3M Cloth | 1 | NO NUMBER |
| | CD-ROM - Microsoft Windows 2000 Professional Including Service Pack 2 | N/A | NO NUMBER |

*Table 1 PFPS Equipment Supplied (Continued)*

| REFERENCE DESIGNATIONS | DESCRIPTION | QUANTITY/ SYSTEM | PART NO. |
|---|---|---|---|
| | Quick Start Guide for Microsoft Windows 2000 Professional | 1 | NO NUMBER |
| | Restore Backup Disk | 1 | NO NUMBER |

*Table 2 PFPS Equipment Required but Not Supplied*

| DESCRIPTION | QUANTITY | PART NO. |
|---|---|---|
| Surge Protector | 1 | Locally Procurred |
| 2 Button Mouse | 1 | Locally Procurred |

1.1 Warnings and Cautions for Specific Equipment. Observe the following warnings and cautions for equipment listed below.

1.1.1 Pen Tablet and Related Components. Observe the Safety Instructions outlined throughout T.O. 31S5-4-2768-91.

1.1.2 Mini-Dock Station. Observe the Safety Instructions outlined throughout T.O 31S5-4-2768-81.

## 2. INSTALLATION

The following are instructions for installation and interconnection of major PFPS components. Procedures are arranged as a series of tasks to be accomplished in sequence to complete installation of the PFPS.

2.1 Unpacking . PFPS equipment is shipped or transported in a cardboard box with components packed individually. Refer to Table 1 for a list of all available PFPS equipment. Position box on a designated working surface and perform the following procedures.

a. Verify box is right side up and open the top.

**NOTE**

When unpacking Pen Tablet, inspect each component for visible damage.

b. Perform inventory of all components and place on working surface, refer to Table 1.

2.2 Interconnecting Cables/Devices. For installation, each cable and device is identified by a part number. Use Table 3 as an inventory list of external interconnecting cables, power cords, and devices. Table 3 also indicates point-to-point connections. If needed, refer to this table while performing installation procedures. Refer to Figure 1 for cable, cord, and device identification.

*Table 3 Cable Connection and Inventory*

| CABLE & DEVICE DESIGNATION/ PART NO. | CONNECTION FROM / TO | FUNCTION |
|---|---|---|
| AC Power Cord | From: Surge Protector (Not Supplied)<br>To: AC Adapter | Power |
| AC Adapter | From: AC Power Cord<br>To: DC Input Connector | Power |
| Telephone Cord | From: Modem<br>To: External Modem Device | Communication |

*Table 3 Cable Connection and Inventory*

| CABLE & DEVICE DESIGNATION/ PART NO. | CONNECTION FROM / TO | FUNCTION |
|---|---|---|
| Serial I/O CF Card | From: Compact Flash (CF) Slot<br>To: Serial External Device | Communication |
| CD-ROM Cable | From: PCMCIA Card<br>To: CD-ROM Drive | Communication |
| Wire Harness A/C | From: Case Wire Harness<br>To: External Source | Communication |
| Case Wire Harness | From: Compact Flash (CF) Slot and DC Input Connector<br>To: Wire Harness A/C | Communication |

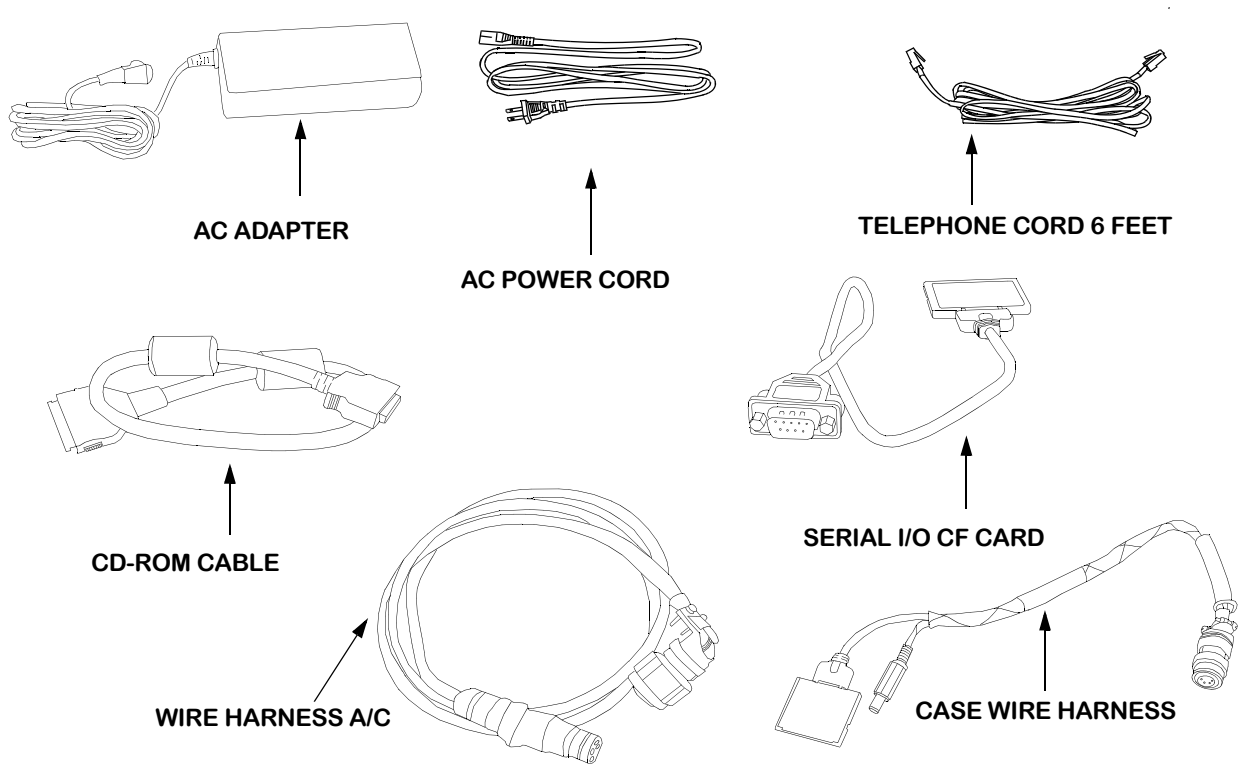


*Figure 1 Cable Identification*

2.3 PFPS System Installation Sequence. Installation sequence for PFPS consists of setting up major components and installing interconnecting cables.

- For Setup in Slip Case, proceed to paragraph 2.3.1 SETUP PEN TABLET IN SLIP CASE to continue.
- For system installation with Mini-Dock station, proceed to paragraph 2.3.2 SETUP PEN TABLET ON MINI-DOCK STATION to continue.
- For system installation without Mini-Dock station or Slip Case, proceed to paragraph 2.3.3 SETUP PEN TABLET WITHOUT SLIP CASE/MINI-DOCK STATION.

2.3.1 Setup Pen Tablet in Slip Case. Perform the following:

a. Use Figure 2 or Figure 3 as a guide and perform system setup.

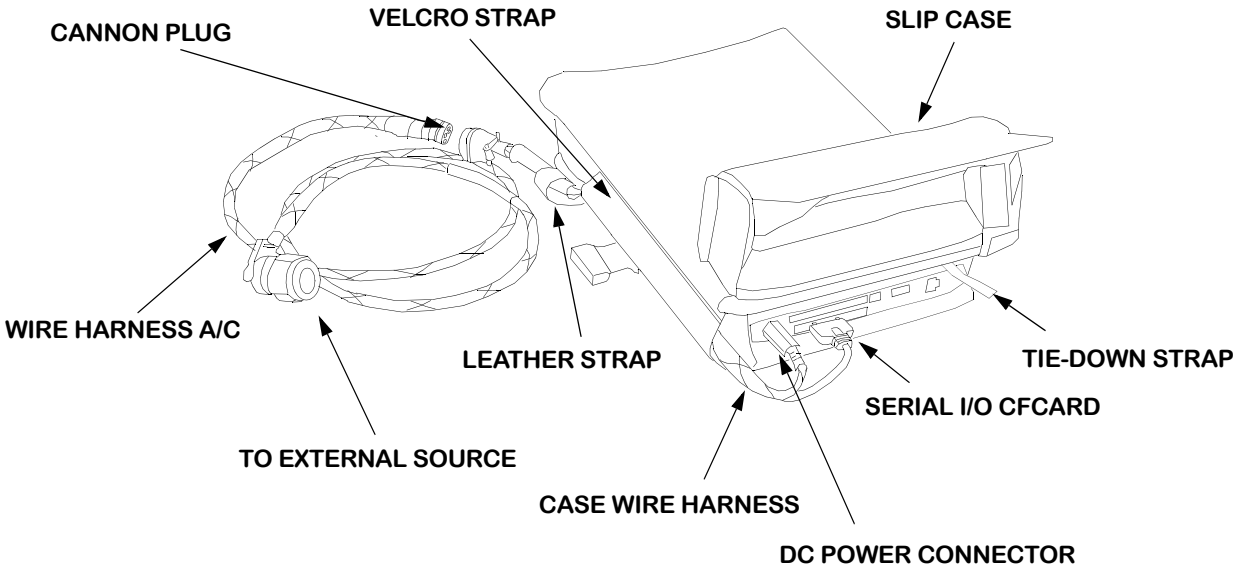


*Figure 2 Pen Tablet in Slip Case Version 1*

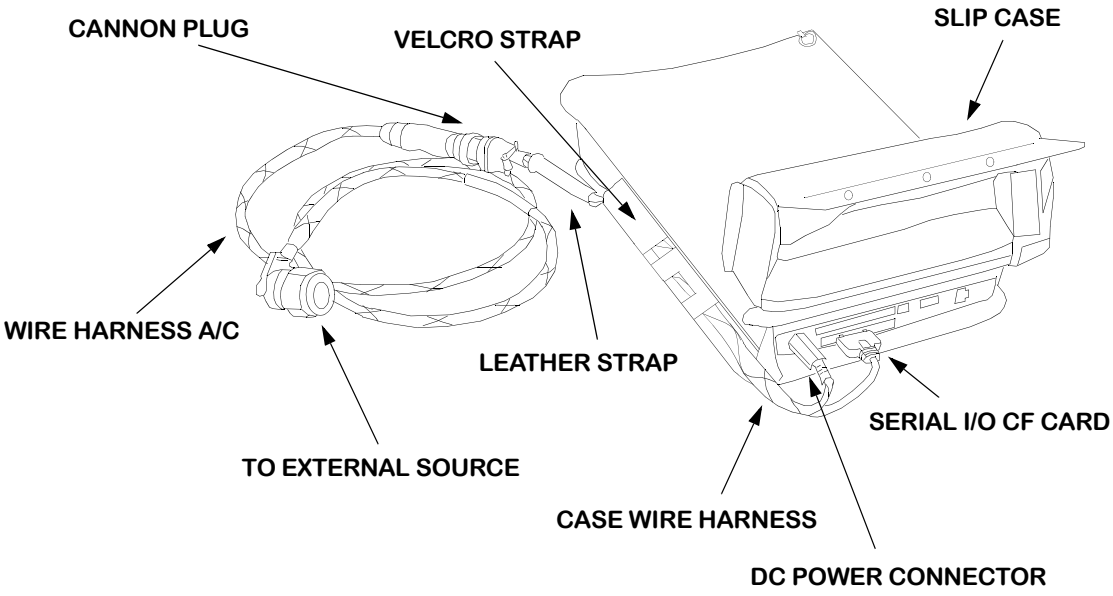


*Figure 3 Pen Tablet in Slip Case Version 2*

b. Insert Pen Tablet within slip case. Secure velcro and tie-down strap (Version I only).

**CAUTION**

Failure to observe the following cautions can cause equipment damage.

- Ensure that a screen protector is installed on the pen tablet screen before you use the pen. The warranty does not cover a screen that is scratched as a result of not using the screen protector.
- Use only the pen stylus provided with your pen tablet. Do not use substitutes that were not designed for the Stylistic LT P-600.

c. Install the screen protector on the Pen Tablet display tablet, as follows:

(1) Peel protective film from the adhesive side of the screen protector, see Figure 4.

(2) Apply the adhesive side to the screen with glueless corner in the lower left, see Figure 4.

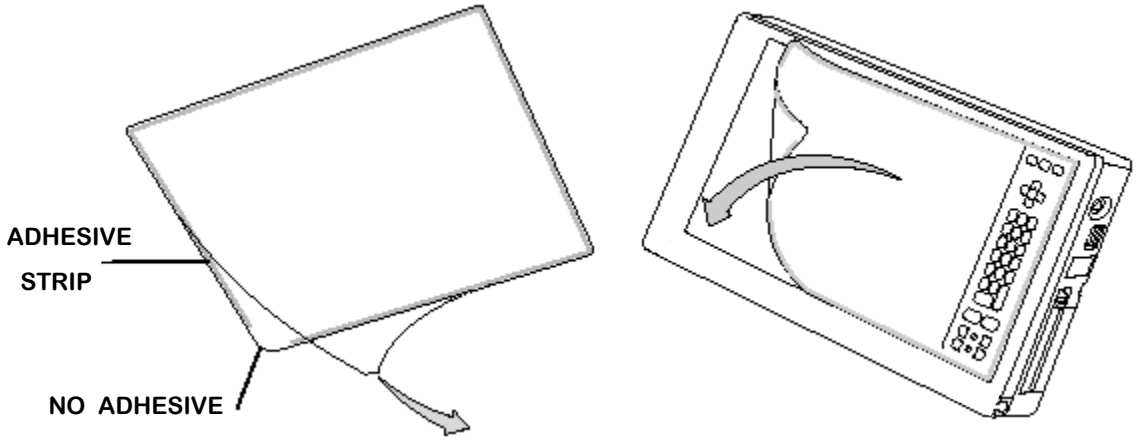


*Figure 4 Screen Protector*

(3) Apply pressure along the edges of the screen protector.

(4) Remove protective film from top of the screen protector.

(5) Wipe the exposed surface of the screen protector with a clean dry cloth to remove any adhesive left behind by the protective film.

**NOTE**

Avoid lifting the screen protector from the screen after installation. The adhesive requires 48 hours to cure properly.

d. If required, open end to access I/O slots.

**NOTE**

Leave enough slack so I/O card will fit into slot without putting tension on socket connector.

e. If required, Insert I/O socket card into slot, see Figure 2 or Figure 3.

f. Insert DC Power Connector into Pen Tablet, see Figure 2 or Figure 3.

g. Slide case wire harness down the side of slip case and secure with velcro strap.

h. Secure leather strap over the end of case wire harness.

i. Attach wire harness A/C to end of case wire harness.

j. If required, connect wire harness A/C to external device.

**NOTE**

Battery Pack installed in Pen Tablet will begin charging once connected to external power source.

k. Proceed to paragraph 4. OPERATION to continue.

2.3.2 Installing Pen Tablet into Mini-Dock Station. Perform the following:

**CAUTION**

Prior to installing Pen Tablet into the Mini-Dock station, be sure to power down system first. Failure to do so could result in damage to the system or Mini-Dock station.

a. Use Figure 5 and Figure 6 as a guide when performing Mini-Dock station installation.

b. Ensure support bail is snapped into one of four slots on the rear of the Mini-Dock station, refer to Figure 6.

c. Position Pen Tablet against the positioning guides on the front of the Mini-Dock station, refer to T.O. 31S5-4-2768-81.

d. Slide the Pen Tablet downward into the tray at the bottom of the Mini-Dock station, press firmly until it is seated.

**CAUTION**

- Ensure that a screen protector is installed on the pen tablet screen before you use the pen. The warranty does not cover a screen that is scratched as a result of not using the screen protector.
- Use only the pen stylus provided with your pen tablet. Do not use substitutes that were not designed for the Stylistic LT P-600.

e. Install the screen protector on the Pen Tablet display tablet, as follows:

(1) Peel protective film from the adhesive side of the screen protector, see Figure 4.

(2) Apply the adhesive side to the screen with glueless corner in the lower left, see Figure 4.

(3) Apply pressure along the edges of the screen protector.

(4) Remove the protective film from the top of the screen protector.

(5) Wipe the exposed surface of the screen protector with a clean dry cloth to remove any adhesive left behind by the protective film.

**NOTE**

Avoid lifting the screen protector from the screen after installation. The adhesive requires 48 hours to cure properly.

f. Proceed to paragraph 4. OPERATION to continue.

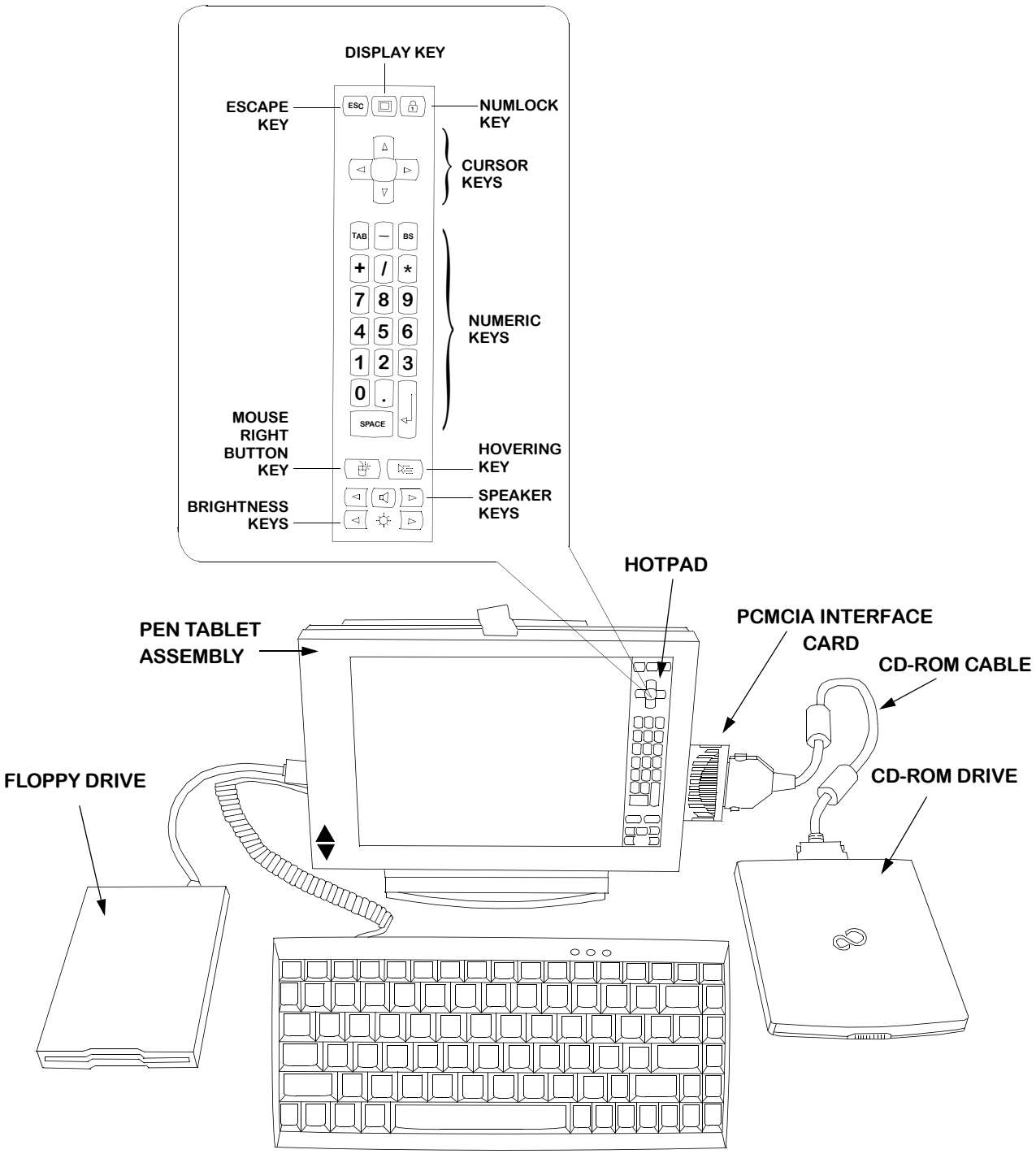


*Figure 5 Pen Tablet Mini-Dock Station (Front)*

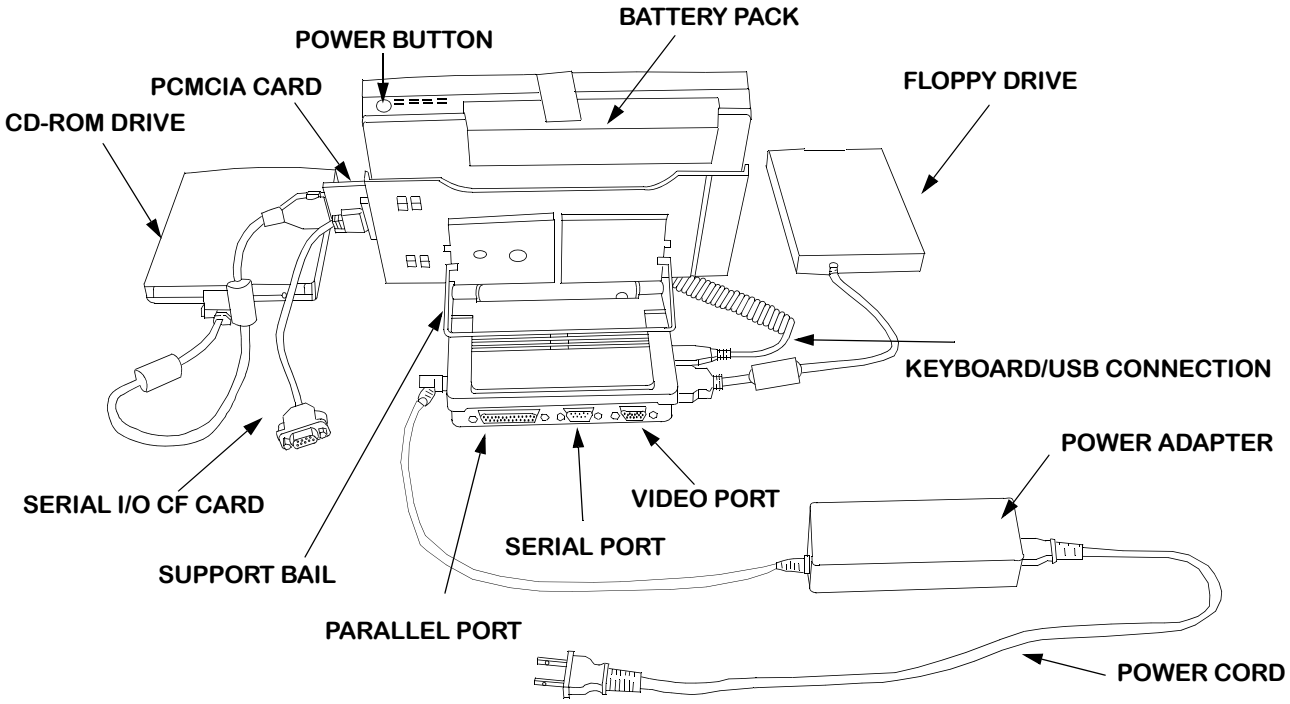


*Figure 6 Pen Tablet Mini-Dock Station (Rear)*

2.3.3 Setup Pen Tablet without Slip Case/Mini-Dock Station. Perform the following:

**CAUTION**

Prior to connecting cables to the Pen Tablet, be sure to power down system first. Failure to do so could result in damage to the system.

a. Use Figure 7 as a guide and perform system setup.

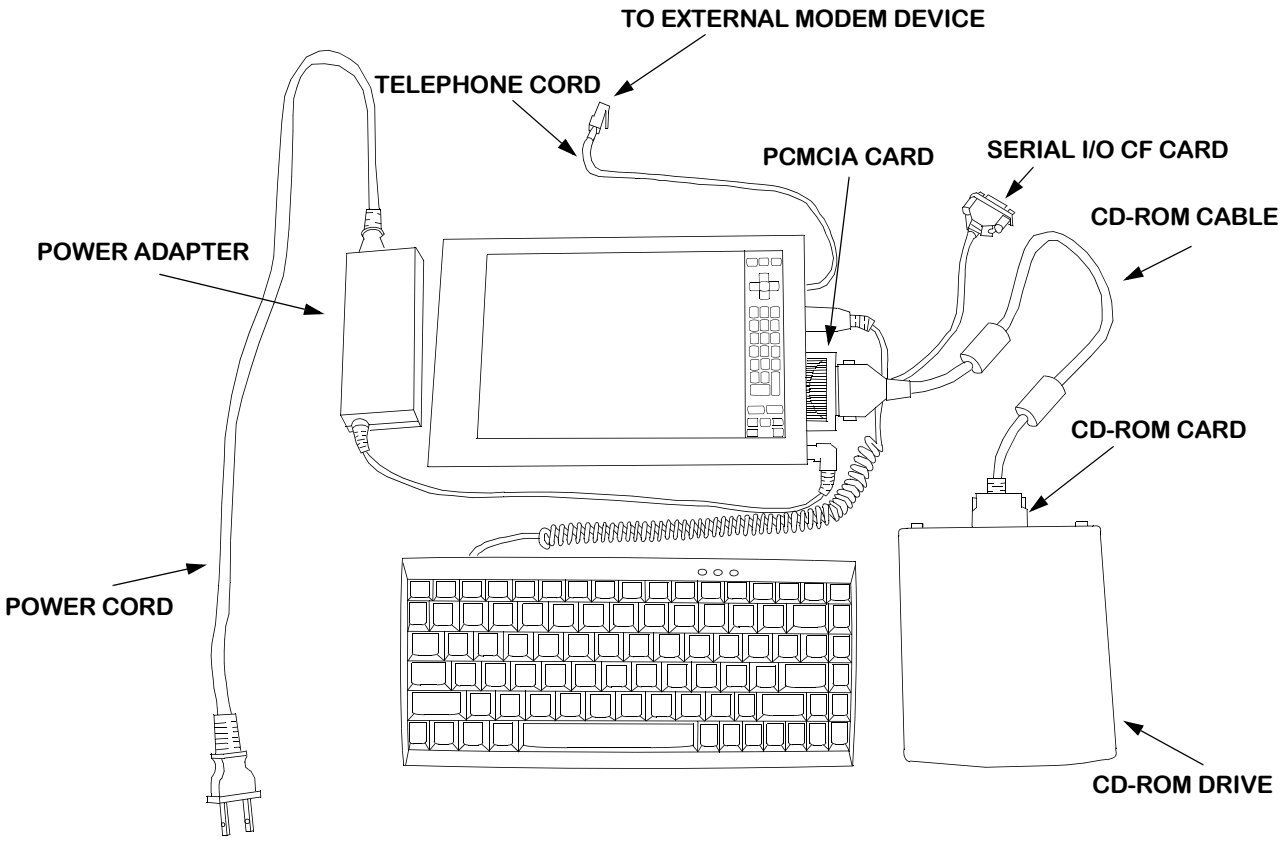


*Figure 7 Pen Tablet without Slip Case/Mini-Dock Station*

**CAUTION**

- Ensure that a screen protector is installed on the pen tablet screen before you use the pen. The warranty does not cover a screen that is scratched as a result of not using the screen protector.
- Use only the pen stylus provided with your pen tablet. Do not use substitutes that were not designed for the Stylistic LT P-600.

b. Install the screen protector on the Pen Tablet display tablet, as follows:

(1) Peel the protective film from the adhesive side of the screen protector, see Figure 4.

(2) Apply the adhesive side to the screen with the glueless corner in the lower left, see Figure 4.

(3) Apply pressure along the edges of the screen protector.

(4) Remove the protective film from the top of the screen protector.

(5) Wipe the exposed surface of the screen protector with a clean dry cloth to remove any adhesive left behind by the protective film.

**NOTE**

Avoid lifting the screen protector from the screen after installation. The adhesive requires 48 hours to cure properly.

c. Proceed to paragraph 4. OPERATION to continue.

2.3.4 Setup External Battery Charger. Perform the following:

a. Connect AC Power Cord from facility power to external battery charger. The power status indicator light turns on indicating that external power is supplied to the charger.

b. Insert the battery pack into one of the slots until the battery pack is firmly seated in the charger, refer to Figure 8.

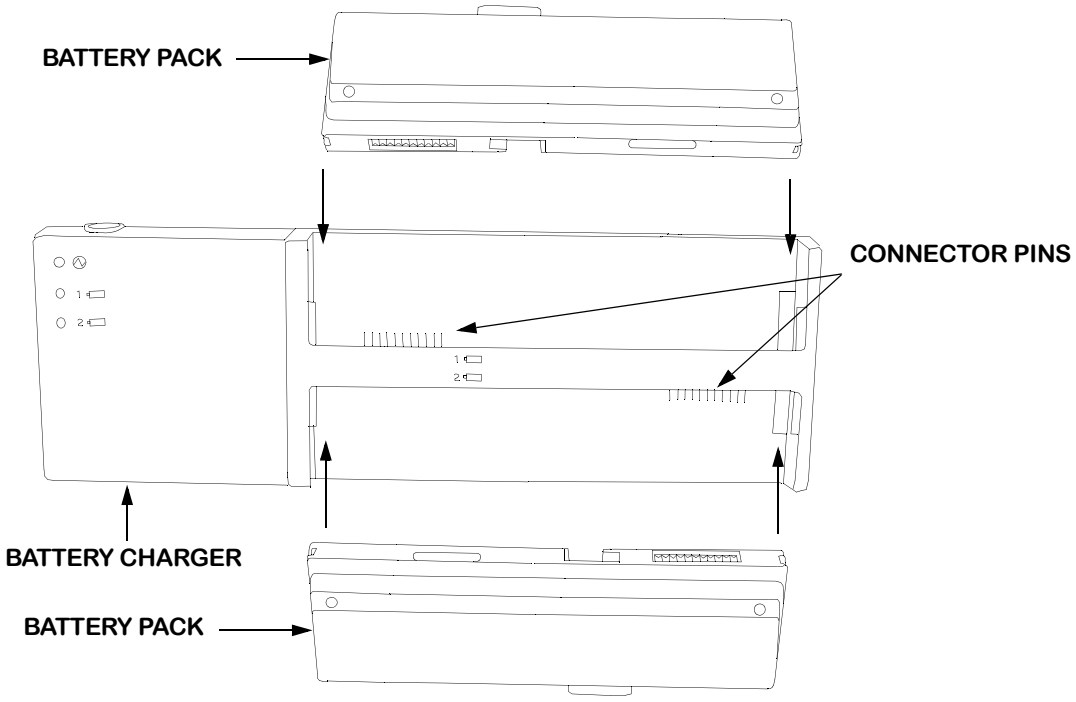


*Figure 8 Battery Charger Setup*

c. There are two status indicators on the battery charger, one for each slot. The status indicators change colors to represent different battery conditions, refer to Table 4.

**NOTE**

The following are areas of concern when using the External Battery Charger:

- Up to two battery packs at a time can be inserted into the battery charger.
- Battery packs are charged one at a time.
- When two battery packs are inserted into battery charger, the first battery pack installed is charged first.

d. Refer to T.O. 31S5-4-2768-91, page 22 CHARGING THE BATTERY PACK for additional information on charging Battery Packs.

## 3. CONTROLS AND INDICATORS

The following are descriptions of controls and indicators needed for operating and maintaining the PFPS. Included are descriptions, listings, and illustrations of controls, switches, and indicators used to start up, operate, and shut down the equipment.

3.1 Pen Tablet Assembly. For Pen Tablet controls and indicators refer to T.O. 31S5-4-2768-91, pages 3-10 PEN TABLET FEATURES.

**NOTE**

Pen Tablet user's guide, T.O. 31S5-4-2768-91, reflects original configuration. Due to Pen Tablet modification the following items identified in T.O. 31S5-4-2768-91, page 3 STYLISTIC LT P-600 PEN TABLET FEATURES are not available:

- Microphone
- System Status LED
- Infrared Keyboard Port
- Pen Holder

3.2 Mini-Dock Station. For Mini-Dock station controls and indicators refer to T.O. 31S5-4-2768-81, pages 4-5 DOCKING DEVICE OVERVIEW.

*Table 4 PFPS Controls and Indicators*

| FIGURE & INDEX NO. | CONTROL INDICATOR | FUNCTION |
|---|---|---|
| Figure 9 | External Battery Charger | |
| -1 | Power Indicator | Illuminates when AC Adapter Connected |
| -2 | Status Indicators (Battery 1 or 2) | Illuminates Green when charge is complete<br>Illuminates Solid Amber when charging<br>Illuminates Blinking Amber when in standby<br>Illuminates Solid Red for **battery pack** alarm/failure<br>Illuminates Blinking Red for **battery charger** alarm/failure |
| -3 | DC Input | Provides connection for AC Adapter |
| Figure 10 | CD-ROM Drive | |
| -1 | Switch 1 | Off Position - (Default Setting) Reserved for manufacturer. |
| -2 | Switch 2 (Power Save Mode) | Off Position - (Default Setting) The drive functions with normal mode.<br>On Position - The drive functions with Power Consumption Save mode (Power Save mode). If the computers function is not stable with Power Consumption Normal mode (Normal mode) or the computer is used for a long time from the battery, set this mode to On. |
| -3 | Switch 3 (Vibration Detect Mode) | On Position - (Default Setting) Vibration detect function works while the CD is spinning. It automatically slows down the spin speed of a CD when the CD vibrates excessively.<br>Off Position - Vibration detect function does not work while a CD is spinning. |
| -4 | Switch 4 (Maker Service mode) | Off Position - (Default Setting) Reserved for manufacturer. |
| -5 | Power Indicator | Illuminates when power is applied. |
| -6 | Busy Indicator | CD-ROM drive is busy. |
| -7 | Power Switch | Applies and removes power. |

| FIGURE & INDEX NO. | CONTROL INDICATOR | FUNCTION |
|---|---|---|
| -Figure 11 | Floppy Disk Drive | |
| -1 | Floppy Disk Drive Access Indicator | Illuminates when drive is reading or writing information. |
| -2 | Eject Button | Ejects floppy diskette from floppy drive. |
| Figure 12 | Keyboard | |
| -1 | Number Lock LED | Shift + Num Lk activates Number Pad (shaded area) |
| -2 | Alphanumeric Lock LED | Illuminates when Caps Lock key in use |
| -3 | Scroll Lock LED | Illuminates when Scroll Lock key is in use. |
| -4 | Num Lk/Scr Lk | Menu controlled |
| -5 | Caps Lock | Menu controlled |
| -6 | Shift | Menu controlled |
| 7 | Number Pad | Active when Number Lock LED Illuminated |
| NOTE: All keys menu controlled. | | |
| Figure 13 | Pen Tablet (Modification) | |
| -1 | Increase Brightness | Increases brightness of Pen Tablet display. |
| -2 | Decrease Brightness | Decreases brightness of Pen Tablet display. |

3.3 External Battery Charger. Refer to Figure 9 and Table 4 for explanation of controls and indicators for External Battery Charger.

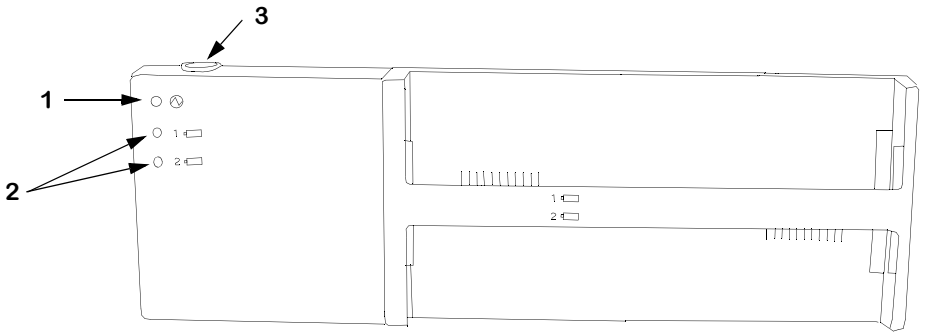


*Figure 9 External Battery Charger Controls and Indicators*

3.4 CD-ROM Drive. Refer to Figure 10 and Table 4 for explanation of controls and indicators for CD-ROM drive.

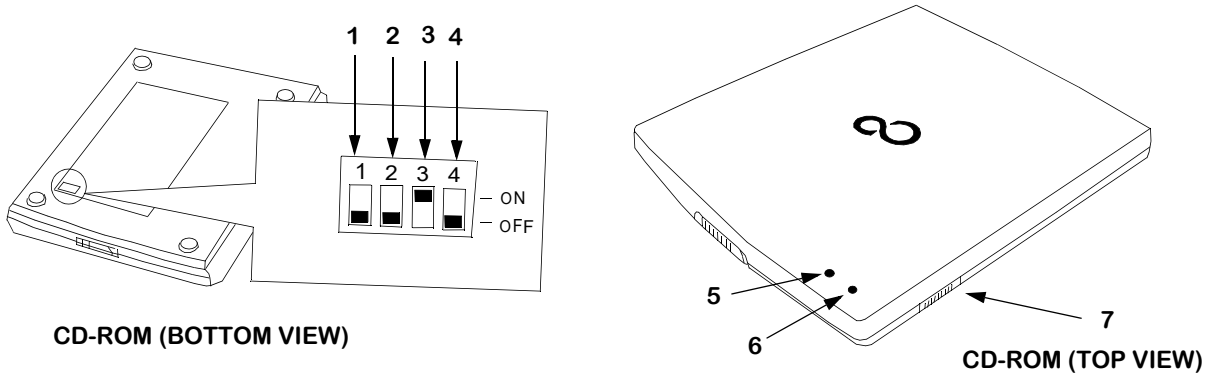


*Figure 10 CD-ROM Drive Controls and Indicators*

3.5 Floppy Disk Drive. Refer to Figure 11 and Table 4 for explanation of controls and indicators for the Floppy Disk drive.

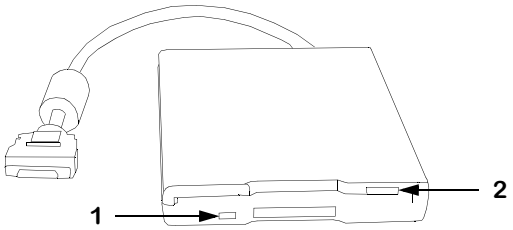


*Figure 11 Floppy Disk Drive Controls and Indicators*

3.6 Keyboard. Refer to Figure 12 and Table 4 for explanation of controls and indicators for the Keyboard.

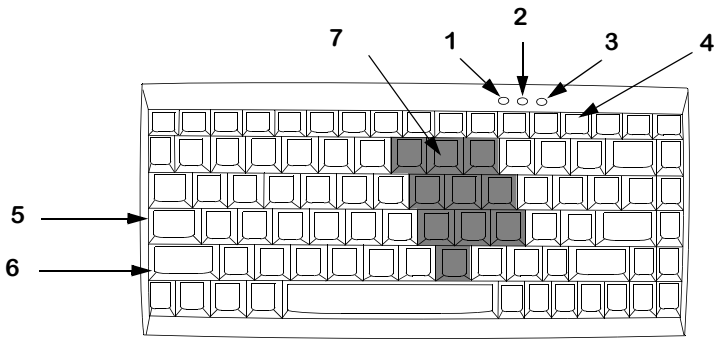


*Figure 12 Keyboard Controls and Indicators*

3.7 Pen Tablet Modification. Refer to Figure 13 and Table 4 for explanation of controls and indicators for the modified Pen Tablet.

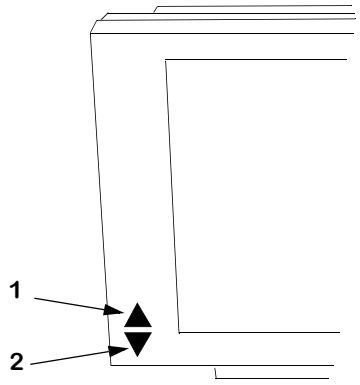


*Figure 13 Pen Tablet (Modified) Controls and Indicators*

## 4. OPERATION

The following instructions include procedures for preparation and operation of the PFPS.

4.1 System Powerup. Power up PFPS System as follows:

**WARNING**

Operating the PFPS while in flight may interfere with navigational aids. Ensure air crew is notified that Pen Tablet will be used in flight. Failure to observe this caution may result in Pen Tablet causing electro-magnetic interference with aircraft avionics, and may cause malfunctions within navigational and communications equipment during critical phases of flight.

a. Ensure that equipment is setup in accordance with paragraph 2.3 PFPS SYSTEM INSTALLATION SEQUENCE.

b. Refer to WP 002 00, Table 2 for Electromagnetic Interference (EMI) Certification before operating PFPS system during flight.

**NOTE**

If use of battery is required to power Pen Tablet, refer to paragraph 2.3.4 for External Battery Charger setup.

c. Press the power button, wait for Desktop screen to appear.

**NOTE**

The light bulbs must be warmed to operating temperature to achieve daylight readable brightness. From a cold start, this could take 10 to 15 minutes for the observer to see the top brightness condition.

d. If required, to adjust screen brightness, use the following steps:

(1) For full brightness, press and hold the two arrow buttons together for 3 seconds then release, see Figure 14. This adjusts the display to the top brightness level.

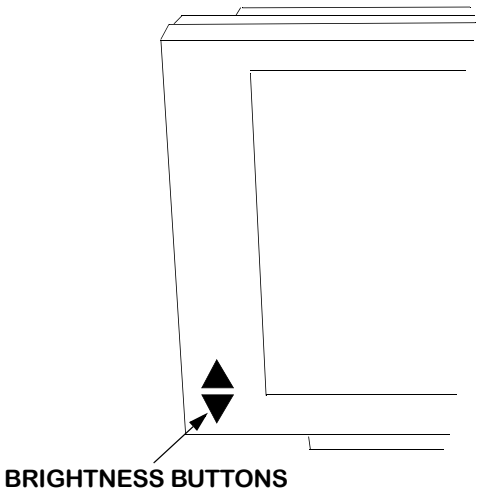


*Figure 14 Brightness Controls*

(2) For minimum setting for Night Vision Goggle (NVG) use, press both buttons together, less than 1 sec, for a “quick click”, to turn the display off, then press the right/bottom arrow to adjust display to the lowest brightness.

4.1.1 Pre-loaded PFPS Mission Planning Software. PFPS Mission Planning Software is pre-loaded.

**NOTE**

Ensure system is loaded with the current PFPS software. Refer to certified MPE or contact the SSF at DSN 777-6538, commercial 801-777-6538; toll free 1-800-SSF-SSFX (800-773-7739). E-mail mpssfa@hill.af.mil.

4.2 Operating Procedure. Operating procedures consists of logging in to perform mission planning, use of mission planning applications and shutdown of mission planning. Ensure system is set up for use as described in paragraph 2.3 PFPS SYSTEM INSTALLATION PROCEDURES.

**NOTE**

The Stylus Pen may need to be calibrated to adjust the cursor position on the screen relative to the position of the pen tip. For instructions, refer to T.O. 31S5-4-2768-91, page 20.

4.2.1 Login To Perform Mission Planning. From the Windows desktop, double-click on PFPS Icon. Then right click on PFPS Icon to select a PFPS program.

4.2.2 Using Mission Planning Applications. Refer to the on-line help of the specific application for operational instructions. Users' guides are located in the PFPS release notes folder.

4.2.3 Shutdown Mission Planning. Shutdown mission planning as follows:

**NOTE**

Mission Planning Data may need to be backed-up prior to performing the following procedures. If required, contact the system administrator.

a. Shutdown each application that is open by clicking on ***File***, then select ***Exit*** from the pull-down menu, or click on ***X*** in right upper corner of each application menu.

4.2.4 System Shutdown Procedure. Ensure system is shutdown as follows:

**CAUTION**

An orderly shutdown of system software and hardware must be performed before removing power from the system. Failure to perform software shutdown shall result in loss of data.

a. Save all open files and close any application programs that may be running.

b. From the Desktop Screen, click on **Start** and select **Shutdown**. The **Shutdown Windows** dialog box appears.

c. Select **Shutdown** and click on the **OK** button. System will shutdown.

4.3 Theory of Operation. The following paragraphs explain the operation of the PFPS and the functional capabilities of each hardware and major software component of the subsystem.

4.3.1 PFPS Mission Planning and Debriefing. The PFPS provides an integrated environment of advanced automation tools for the USAF aircrews to do pre-mission planning and post-mission debriefing. It uses digitized charts, satellite imagery, weapons delivery and target area tactics, and optional cartridge load. A color LCD panel displays this information.

The PFPS acts as an input/output (I/O) device for uploading/downloading mission data to/from portable DTMs and/or PC cards and/or Floppy diskettes. Hard copies of printed text, forms, map data or route leg overlays print in black and white or color on paper and transparencies.

4.3.2 PFPS Main Functions. PFPS provides the following main functions.

a. Digital image retrieval, data base management, display, pan, and zoom.

b. Geographical correlation of digital image databases - aeronautical charts, Digital Terrain Elevation Data (DTED), LANDSAT satellite photos, SPOT satellite photos, digitized reconnaissance photos, and user defined overlays.

c. USAF software generated vector graphics overlays displayed over basemap images.

d. Basemap geographic coordinate transformation - image to Latitude/Longitude (Lat/Lon), Universal Transverse Mercator (UTM) or Military Grid Reference System (MGRS) coordinates.

e. Mouse or Touch Pad-controlled cursor input.

f. Hard copy printout of displays, forms, and data.

g. Diagnostic software programs to support maintaining proper operation of the PFPS.

4.3.3 System Functional Description. Figure 22 through Figure 27 shows the system diagram. With the system powered up and the appropriate programming/data loaded, the operator controls the system by using the keyboard and stylus. Logging on connects the operator to the computer that controls the system. Commands and data pass between the Pen Tablet and an external ethernet device via a modem card ethernet/fax interface device.

Once connected via the telephone cable, the Pen Tablet has the capability to be connected to existing networks.

4.3.4 Color Map and Imagery Data. Color map and imagery data is displayed on the color display panel of the Pen Tablet. The hard disk drive stores available map data. The CD-ROM drive and the 3.5 inch floppy disk drive are used to input new data.

The system operator can pan and select zoom factors between 800% and 6%. When the background display zooms, any information that overlays the background zooms at the same rate. The color display shows the current level of zoom. The operator can display the latitude, longitude, and elevation of any point, if DTED is loaded, by moving the cursor with the mouse. Information appears at the bottom of the display.

Using data stored on the hard disk drive along with individual user data and profiles imported via the floppy disk, CD-ROM, LAN, or Internet, the operator plans the combat mission.

4.3.5 Hardware Functional Capabilities. Refer to Figure 22 through Figure 24 to view a functional diagram of the PFPS. For additional information on individual equipment, refer to WP 002.

4.3.5.1 Pen Tablet. The laptop computer uses Windows 2000 Operating System with a 2.5GHz Pentium III processor and 256MB RAM. The Pen Tablet contains the following devices:

4.3.5.1.1 Hard Drive. The Pen Tablet contains a 40GB hard drive.

4.3.5.1.2 CD-ROM Drive. The Pen Tablet is equipped with an external CDROM drive. The CD-ROM drive can load updated program data and import user data/profiles from CD-ROMs.

**CAUTION**

The following cautions must be considered when the Busy Indicator is blinking while using the CD-ROM drive. Failure to observe these cautions can cause loss of data or hardware anomalies.

- DO NOT open the disk cover.
- DO NOT remove the PCMCIA card.
- DO NOT turn off the CD-ROM drive's power switch.
- DO NOT disconnect the AC adapter.

4.3.5.1.3 Floppy Drive. The Pen Tablet is equipped with an external 3.5" floppy drive that can load updated program data and import/export user data/profiles.

**NOTE**

Pen Tablet does not have a floppy drive connection. The Pen Tablet must be attached to the Mini-Dock station for floppy drive use.

4.3.5.1.4 Modem. The Pen Tablet is equipped with a standard integrated 56K capable v.92 Modem. Data can be imported/exported via the modem port. Fax capabilities are also provided.

4.4 Power Distribution Refer to the applicable paragraph below for specific power distribution.

4.4.1 Facility Power. The PFPS system requires facility power of 100-240 VAC 50-60 Hz.

4.4.2 Battery Power. The PFPS utilizes rechargeable batteries to provide10.8 V DC when not connected to facility power.

**NOTE**

- Battery packs will charge while the AC power is attached to Pen Tablet regardless if the system is powered up/down. Refer to T.O. 31S5-4-2768-91, page 22, CHARGING THE BATTERY PACK.
- The CD-ROM drive is powered through the PCMCIA card slot. Running the CD-ROM drive from the computer battery causes the battery to discharge very quickly. Strongly recommended to connect AC Adapter to the Pen Tablet when using the CD-ROM drive.

4.4.2.1 Power Options. To view power settings, perform the following steps:

a. Click on **Start**, **Settings**, **Control Panel**, then **Power Options**.

b. Click on the **Power Meter** tab. Displays the Current power source and percentage of battery charge.

4.5 Software Functional Description. If required to restore Pen Tablet software, perform the following:

4.5.1 Operating System Software. The Pen Tablet uses a Windows 2000 operating system.

The software provides a common set of mission planning functions. A well defined interface is provided to allow Aircraft/Weapons/Electronic (A/W/E) countermeasure unique functions to be integrated into the system. The PFPS software consists of the following integrated packages:

4.5.2 Combat Flight Planning Software (CFPS). CFPS is interoperable with other mission planning systems via data file exchange. CFPS provides the following capabilities:

a. Print flight planning forms (i.e. Form 70) for climb/cruise/descent calculations based on performance data from DoD standard Flight Performance Modules (FPM).

b. Calculate Takeoff and Landing (TOLD) cards. (TOLD may be run "stand alone" or integrated with CFPS).

c. Fully integrated navigational aid database accessible through sophisticated search routines. Includes: Airfields, Aimpoints, Navaids, Waypoints, Air Refueling Tracks/Anchors, Military Training Routes and Airways (Jet and Victor Routes).

d. Full Local Point Database support: Create, Edit, Search, Print and Transfer to/from MPS.

e. Enter/Display/Print coordinate data in over 200 worldwide datums.

f. Sophisticated Refueling Options.

g. Enhanced Orbit and Delay Point Calculations.

h. Start, Taxi and Takeoff (STTO) and Approach Point (APPR) Planning.

4.5.3 FalconView (Digital Mapping Software). FalconView is a map data manager that is used to update and customize for mission requirements. FalconView is fully integrated with CFPS and provides the following capabilities:

a. Supports Blank, Vector, Raster and DTED map types. All maps are displayed in an equal-ARC projection. Raster maps include TIROS, CADRG, and CIB. Supported DTED types are NIMA Level 1 DTED and CMS Phase II DTED.

b. FalconView supports multiple drive access. Map data can be accessed from any number of local or networked map data paths.

c. Route overlay is a graphical depiction of a flight plan. The Route Editor can create, edit, save, and load route files. As an integrated component of PFPS, FalconView provides synchronized route editing of multiple routes.

d. Drawing overlay is a generic user created geographically referenced layer consisting of lines, polylines, polygons, ellipses, rectangles and text objects. The Drawing Editor can create, edit, save, and load Drawing files.

e. Local Points overlay displays user created reference points that are stored in the PFPS Local Points database. The Local Points Editor can add, remove, and edit the points in the Local Points database.

f. Manual CHUM overlay is a user created chart update layer consisting of power lines and numerous types of towers. The Manual CHUM Editor an create, edit, save, and load Manual CHUM files.

g. Threat overlay provides a display of tactical information from either a TACELINT intel feed or manually generated files. The Threat Editor can create, edit, save, and load Threat files.

h. Supports a moving map display that enables the system to receive and track a live GPS feed in real time.

i. ECHUM overlay displays chart update data from NIMA.

j. DAFIF overlays include Airports, Navaids, Waypoints, Special Use Airspace Boundaries, Airspace Boundaries, Air Refueling Tracks & Anchors, Military Training Routes and Airways.

k. Aimpoints overlay displays data from the PFPS Aimpoints database.

l. Provides Vector Overlay, Lat-Long Grid, and a Scale Bar overlay.

4.5.4 Combat AirDrop Planning Software (CAPS). CAPS supports all USAF AirDrop communities. CAPS is fully integrated with CFPS and FalconView and provides the following capabilities:

a. Calculates Computed Airdrop Release Point (CARP) based on the standard ballistic computation formats used for low and high altitude airdrop as defined within the AFI 11-231. Provides a graphical interface for the entering of pertinent airdrop data and the generating of custom-made displays of standard overlays and the Drop Zone (DZ) in FalconView.

b. Provides full CARP and High Altitude Release Point (HARP) solutions for C-130, C-141, C-17 and C-5 aircraft. Supports all USAF Airdrop communities. Supports automated DZ Survey generation and a validated DZ database.

4.5.5 Combat Weapon Delivery Software (CWDS). Provides integrated solutions to combat aircrew weapon delivery planning problems. The program incorporates mission planning considerations in TO 1-1M-34 and aircraft specific Dash 34 and Dash 25 TOs. It replaces most TO ballistic tables and is fully integrated with CFPS and FalconView and provides the following capabilities:

a. Attack planning for conventional and nuclear munitions employment by fighter and bomber aircraft using level, dive, loft/toss, and dive toss deliveries.

b. Target area maneuver planning including pop-up, fly-up, and mapping maneuvering.

c. Checks safe escape, safe separation, dive recovery, fuze arming, and Cluster Bomb Unit (CBU) functioning requirements.

d. CBU impact pattern predictions.

e. Weapon ballistics and safe escape table generation and delivery error and abort criteria analysis.

4.5.6 Aircraft Weapons Electronics (AWE). AWE software is fully integrated with PFPS and provides the following capabilities:

a. Navigation, and mission requirements.

b. Supports standard mission download data for post flight debriefing.

## 5. CORRECTIVE MAINTENANCE

This chapter provides fault isolation, troubleshooting, inspection, removal and replacement, and general repair for all hardware components.

5.1 Fault Isolation. Fault isolation involves the use of error messages noted during power-up and equipment substitution.

5.1.1 Computer. After Pen Tablet is powered up, the Power On Self Test (POST) routine is automatically invoked. If an error is detected, a WARNING message is displayed. Make a note of the message and refer to On-line help, accessible through the **Start** button and selecting **Help** or go to **www.Fujitsu.com** for additional support.

5.2 Troubleshooting. The following paragraphs discuss troubleshooting the Pen Tablet and it's major components. If required contact the local Comm Squadron for maintenance support. Also, for WARRANTY PROVISIONS call DSN 777-6538, commercial 801-777-6538; toll free 1-800-SSF-SSFX (800-773-7739). E-mail mpssfa@hill.af.mil.

5.2.1 Pen Tablet. The procedures in this paragraph are to be used in determining if an individual LRU requires replacement. These procedures are performed in response to an LRU failing a POST. The manual troubleshooting procedures compliment the system's diagnostic software discussed in TO 31S5-4-2768-1, WP 002.

a. Before performing troubleshooting. Refer to Figure 22 through Figure 27 to verify cables are properly connected.

b. Verify all plug-in devices are securely seated.

c. Verify all peripheral devices are properly connected.

d. Power-up the Pen Tablet, refer to paragraph 4.1 SYSTEM POWERUP.

e. If Windows has booted up, but an error message was observed during power-up or a failure occurred during normal operation, perform the following:

(1) If mission planning is active, logout.

(2) If required, shutdown system. Refer to paragraph 4.2.4 SHUTDOWN PROCEDURE and replace defective device.

(3) If required, power-up the Pen Tablet.

5.2.2 Power-up Failure. Perform the following procedures to identify failures related to system power-up.

a. Ensure AC Power Cord is plugged into live AC facility power.

b. Ensure AC Power Adapter is securely connected to Pen Tablet or Mini-Dock station, as applicable.

5.2.3 Operating System Failure. Perform the following to restore Windows 2000 Operating System if the hard drive has been replaced:

**NOTE**

To prevent loss of data, it is recommended that a back up be performed prior to beginning hard drive restoration.

5.2.3.1 Uninstall Current Partitions. Perform the following

a. If required, remove Pen Tablet from Slip Case and connect to the Mini-Dock station, refer to Figure 15.

b. Ensure Mini-Dock Station is fully configured. Refer to Figure 15.

c. Locate **Operating System Recovery Boot Disk 1** floppy disk and load into floppy drive.

d. Power-up Pen Tablet assembly. System will boot from floppy.

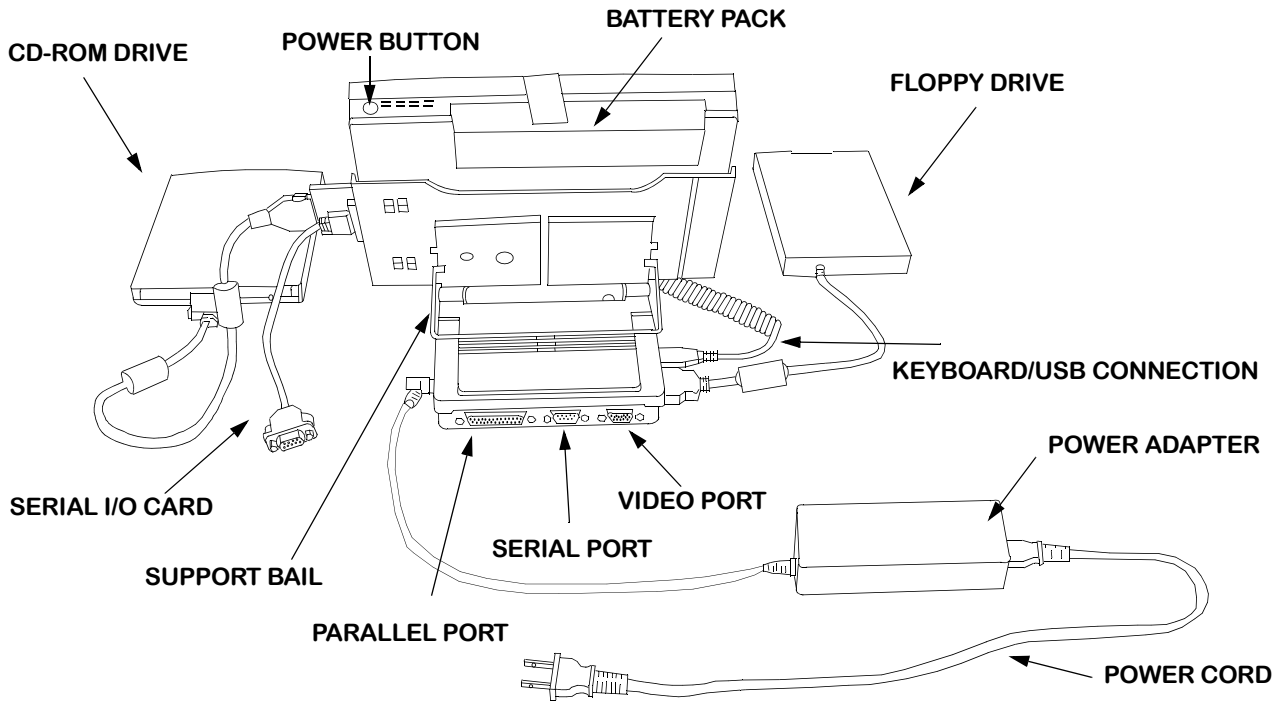


*Figure 15 Configuration of Mini Dock Station with Pen Tablet Attached*

e. A Microsoft Windows 98 Startup Menu appears, type **1** (DOS Boot) and then press **Enter**. The *A:* prompt appears.

**NOTE**

If illuminated, Num Lk must be set to **OFF**.

f. If required, press Shift+Num Lk Buttons together.

g. Type **FDISK** and then press **Enter**. A screen stating ***Do you wish to enable large disk support (Y/N)?*** appears.

h. Type **Y** then press **Enter**. A FDISK Options screen appears.

i. Type **3** (Delete partition or Logical DOS Drive) then press **Enter**. A Delete DOS Partition or Logical DOS Drive window appears.

j. Type **3** (Delete Logical DOS Drive(s) in the Extended DOS Partition). A ***WARNING! Data in a deleted Logical DOS Drive will be lost. What drive do you want to delete?*** message appears.

k. Enter desired **drive letter** (usually D) and press **Enter**.

l. An ***Enter Volume Label*** line appears. Press **Enter**.

m. A question appears asking ***Are you sure (Y/N)?*** Type **Y** and **Enter**. A return will indicate D drive deleted.

n. Press **Esc** key twice. The FDSK Options screen appears.

o. Type **3** and **Enter**. A Delete DOS Partition or Logical DOS Drive screen appears.

p. Type **2** (Delete Extended DOS Partition) then press **Enter**. A ***WARNING! Data in the deleted Extended DOS Partition will be lost. Do you wish to continue (Y/N)?*** message appears.

q. Type **Y** and press **Enter**. A return will indicate the Extended DOS Portion deleted.

r. Press **ESC** to continue. The FDISK screen appears.

s. Type **3** and **Enter**. A Delete DOS Partition or Logical DOS Drive screen appears.

t. Type **1** (Delete Primary DOS Partition) then press **Enter**. A Delete Primary DOS Partition message appears stating ***WARNING! Data in the deleted Primary DOS Partition will be lost. What primary partition do you want to delete?***

u. Type **1** then press **Enter**. A message ***Enter Volume Label?*** appears.

v. Press **Enter**. A message ***Are you sure (Y/N)?*** appears.

w. Type **Y** then press **Enter**. Primary DOS Partition deleted.

x. A message ***Press ESC to continue*** options appears, press **ESC** twice. A message appears stating ***You MUST restart your system for your changes to take effect.***

y. Press **ESC**. The *A:* prompt appears.

z. Press **Ctrl-Alt-Del** to reboot. The machine reboots, and the Windows 98 Startup Menu appears.

5.2.3.2 Partition Hard Drive. Perform the following:

a. Type **1** and press **Enter**. The *A:* prompt appears

**NOTE**

If illuminated, Num Lk must be set to **OFF**.

b. If required, press Shift+Num Lk Buttons together.

c. At the *A:* prompt, type **FDISK**. The message ***Do you wish to enable large disk support (Y/N)?*** appears.

d. Press **Y**, then press **Enter**. The FDISK options window appears.

e. Type **1** (Create DOS partition or Logical DOS Drive) then press **Enter**.

f. Type **1** (Create Primary DOS Partition) then press **Enter**. The following message appears ***Verifying drive integrity***.

g. The following message appears, ***Do you wish to use the maximum available size for a Primary DOS Partition and make the partition active (Y/N)?*** Type **N** then press **Enter**. The following message appears ***Verifying drive integrity***.

h. The following message appears, ***Enter partition size in Mbytes or percent of disk space (%) to create a Primary DOS Partition***. Type **5000** then press **Enter**. A message appears stating "Primary DOS Partition Created".

i. Press **ESC** to continue. The FDISK Options window appears.

j. Type **2** (Set Active Partition) then press **Enter**. The Set Active Partition window appears.

k. Enter the number of the partition you want to make Active. Press **1** then press **Enter**. Partition 1 made active.

l. Press **ESC** to continue. FDISK Options window reappears.

m. Type **1** (Create DOS partition.....) and then press **Enter**.

n. Type **2** (Create Extended DOS Partition) and then press **Enter**. A message appears stating ***Verifying drive integrity***.

o. A message ***Enter logical drive size in Mbytes or percent of disk space*** appears, press **Enter**. A message appears stating ***Verifying drive integrity***.

p. A message ***Enter logical drive size in Mbytes or percent of disk space*** appears, press **Enter**. A message appears ***Extended DOS Partition created***.

q. Press **ESC** to continue.

r. Press **ESC** to exit FDISK Options.

s. Press **ESC**. The *A:* prompt appears.

t. Press **Ctrl-Alt-Del** to reboot system. A Microsoft Windows 98 Startup Menu appears

5.2.3.3 Format Hard Drive. Perform the following:

a. Type **1** (DOS Boot) and then press **Enter**. The *A:* prompt appears.

**NOTE**

If illuminated, Num Lk must be set to **OFF**.

b. If required, press Shift+Num Lk Buttons together.

c. Type **format**<space>**c:** and then press **Enter**. A message ***Proceed with Format (Y/N)?*** appears.

d. Type **Y** and then press **Enter**. C: drive is formatting.

e. A message ***Volume label (11 characters, Enter for None)?***, press **Enter**. The *A:* prompt appears.

f. Type **format**<space>**d:** and then press **Enter**. A message ***Proceed with Format (Y/N)?*** appears.

g. Type **Y** and then press **Enter**. D: drive begins formatting (approx 30 mins).

h. A message ***Volume label (11 characters, Enter for None)?***, press **Enter**. The *A:* prompt appears.

i. Type **GDISK**<space>**1**<space>**/mbr**, then press **Enter**. The *A:* prompt reappears.

j. Press **Ctrl-Alt-Del** to reboot system. Microsoft Windows 98 Startup Menu appears.

**NOTE**

If illuminated, Num Lk must be set to **OFF**.

k. If required, press Shift+Num Lk Buttons together.

l. Select **2** and then press **Enter**. The *A:* prompt appears.

m. Locate **Fujitsu Recovery Disc 1** CD-ROM and load into CD-ROM drive label side up.

n. At the *A:* prompt, type **copy**<space>**r:*.***<space>**d:** and then press **Enter**. Files copying to D: drive.

o. When the *A:* prompt reappears, remove CD-ROM and place in container for future use.

p. Locate **Fujitsu Recovery Disc 2** CD-ROM and load into CD-ROM drive label side up.

q. At the *A:* prompt, type **copy**<space>**r:*.***<space>**d:** and then press **Enter**. Files copying to D: drive.

r. When the *A:* prompt reappears, remove CD-ROM and place in container for future use.

s. Press **Ctrl-Alt-Del** to reboot system.

t. After reboot, the Microsoft Windows 98 Startup Menu appears, type **3** (Ghost Boot) and then press **Enter**.

u. Remove **Operating System Recovery Boot Disk 1** from floppy drive and store for future use.

5.2.3.4 Install Operating System. Perform the following:

a. Locate **Operating System Recovery Boot Disk 2** and load into floppy drive

b. Press any key. An **About Symantec Ghost** dialog appears.

c. Click **OK**. A **Symantec Ghost 8.0** dialog appears.

d. Click **Local** then **Partition** then **from Image** from the submenu. An **Image file name to restore from** dialog appears.

e. In the pull-down menu, select **d: drive**.

f. In the Image file name to restore from window, select **FUJITSU.GHO**. A Select Source partition from image file dialog appears.

g. Select **OK**. A Select local destination drive by clicking on the drive number dialog appears.

h. Select **OK**. A Select destination partition from Basic drive: 1 dialog appears.

i. Select **OK**. A Question: dialog appears asking, ***Proceed with partition restore? Destination partition will be permanently overwritten***.

j. Select **Yes**. Files will begin writing to hard drive. When complete, a Clone Complete dialog appears.

k. Select **Continue**. The **Symantec Ghost 8.0** dialog reappears.

l. Click **Quit** from the submenu. A **Quit Symantec Ghost** dialog appears.

m. Select **Yes**. Remove floppy and retain for future use.

n. Press **Ctrl-Alt-Del** to reboot system.

o. Operating System (OS) installation complete.

5.2.4 Preparing to Work with Hardware Failures. Perform any or all of the following steps, as applicable, in preparation to work with hardware components:

a. Ensure work surface is flat and clean to prevent scratching or damaging the Pen Tablet cover.

b. Save any work in progress and close all open application programs.

c. Remove any media inserted into CD-ROM or Floppy Drives.

d. Ensure Pen Tablet is undocked from Mini-Dock station. Refer to T.O. 31S5-4-2768-81 page 7 MINI-DOCK INSTALLATION GUIDE.

e. If required, power down the computer and all attached devices.

f. Disconnect the Pen Tablet from electrical outlet.

g. Disconnect all other external cables from Pen Tablet.

h. Handle components and cards by their edges, and avoid touching pins and contacts.

5.2.5 Hard Drive Failure. If hard drive is faulty, replace hard drive. Refer to paragraph 5.4.3 REMOVAL AND REPLACEMENT OF HARD DRIVE.

5.2.6 Floppy Drive Failure. If Pen Tablet does not recognize the Floppy Drive perform the following:

a. Ensure floppy drive is properly seated in Mini-Dock station.

b. Shutdown Pen Tablet system, refer to paragraph 4.2.4 SYSTEM SHUTDOWN PROCEDURE.

c. Disconnect floppy drive and inspect connector pins for any visual damage.

d. Connect floppy drive cable to Mini-Dock station.

e. Power-up Pen Tablet assembly. Refer to paragraph 4.1 SYSTEM POWERUP.

f. If floppy drive continues to fail, refer to paragraph 5.4.4.1 REMOVAL OF EXTERNAL FLOPPY DRIVE.

5.2.7 CD-ROM Drive Failure. If experiencing CD-ROM failure, perform the following:

a. Ensure CD-ROM cable is properly seated in Pen Tablet.

b. If required, perform the following to clean CD-ROM:

(1) Using a CD cleaner, moisten a soft clean cloth.

(2) Wiping from center toward edge, wipe CD-ROM until disk is clean.

(3) Using a soft dry cloth, wipe CD-ROM from center toward edge until dry.

c. If CD-ROM drive failure continues, shutdown Pen Tablet system, refer to paragraph 4.2.4 SYSTEM SHUTDOWN PROCEDURE.

d. Disconnect CD-ROM drive and inspect connector pins for any visual damage.

e. Connect CD-ROM drive cable to Pen Tablet assembly.

f. Power-up Pen Tablet assembly. Refer to paragraph 4.1 SYSTEM POWERUP.

g. If CD-ROM drive continues to fail, reload CD-ROM drivers as follows:

**NOTE**

Ensure Pen Tablet and floppy drive are connected to Mini-Dock.

(1) Locate floppy disk containing CD-ROM drive setup.

(2) Insert floppy disk into floppy drive and follow on-screen instructions.

(3) If problem persists, refer to paragraph 5.4.5.1 REMOVAL OF EXTERNAL CD-ROM.

5.2.8 Battery Charger Failure. If a blinking red light is illuminated, a faulty condition within the battery charger is indicated, refer to paragraph 5.4.7 for REMOVAL AND REPLACEMENT OF BATTERY CHARGER.

5.2.9 Battery Pack Failure. If fully charged battery fails to power Pen Tablet system, refer to paragraph 5.4.8 for REMOVAL AND REPLACEMENT OF BATTERY PACK.

5.2.10 Power Adapter and Cable Failures. These items are designated non-repairable or throw-away at the organizational level. Suspected faulty cables should be inspected for visible damage, such as, broken or bent connector pins, frayed insulation exposing bare wire, etc. During an LRU replacement, inspect cables for obvious damage and replace as needed. If during fault analysis, the inter-connecting cable is suspected of being faulty, swap the cable with a known good cable and check PFPS operation to confirm fault has been corrected.

5.2.11 Mini-Dock Station Failure. If Mini-Dock station is faulty, replace docking station. Refer to paragraph 5.4.2 REMOVAL AND REPLACEMENT OF MINI-DOCK STATION.

5.3 Inspection and Maintenance. Inspect system whenever a component is removed or replaced after shipment.

5.3.1 Periodic Maintenance. Perform the following maintenance procedures as required:

5.3.2 Corrosion. Refer to T.O. 1-1-689 for corrosion recognition, prevention and elimination.

5.3.3 Battery Pack. The battery pack will automatically begin charging whenever power is supplied through the AC adapter to the Pen Tablet.

5.4 Removal and Replacement. The following conventions apply to all removal and replacement procedures:

a. Removal and maintenance procedures assume proper powering down of equipment. Maintenance should be performed with system powered down.

b. The extent of disassembly should be determined by preliminary inspection and test as required to determine any malfunctioning unit. No part should be removed unless it requires replacement or servicing unless it needs to be removed to allow access to other parts.

c. Disassembly includes the removal of cable connectors and parts necessary to facilitate removal or access to a part requiring replacement. All disassembly procedures are described in detail unless self-evident upon inspection.

d. Use care when removing PFPS devices to avoid damage to mechanical parts, wiring, and electrical parts. Perform the following general disassembly steps:

(1) Lay all parts out in order on a flat, clean surface. Place hardware and other small parts in suitable containers.

(2) Carefully observe all specific instructions.

(3) Never apply excessive force during removal and installation of parts. If a part is not easily removed, investigate the cause. The part may be out of alignment or an attaching part may have been removed.

(4) Always use the proper tool for a particular operation.

**CAUTION**

All procedures identified as ⚲ in this T.O. must be followed exactly as written and according to the Electro Static Discharge (ESD) handling procedures as outlined in TO 00-25-234. Failure to observe this caution will jeopardize the ESD device and thus the mission integrity.

e. When the ESD symbol ⚲ appears between a paragraph number and title, that paragraph and subparagraphs shall be treated as an ESD device handling procedure.

f. Refer to Figure 22 through Figure 27, as required, for interconnect diagrams for Pen Tablet.

5.4.1 Removal and Replacement of Pen Tablet. Perform the following remove and replace procedures.

5.4.1.1 Removal of Pen Tablet. . Perform the following:

**NOTE**

Mission Planning data may need to be backed-up prior to performing the following procedures.

a. Save any work in progress and close all open application programs.

b. Remove any media inserted into CD-ROM or Floppy Drives.

c. Shutdown Pen Tablet system, refer to paragraph 4.2.4 SYSTEM SHUTDOWN PROCEDURE.

d. If required, remove Pen Tablet assembly from Slip Case, refer to paragraph 5.4.10.1 REMOVAL OF SLIP CASE.

e. If installed, lift Pen Tablet off of Mini-Dock station.

f. Disconnect all other external cables from Pen Tablet assembly.

**NOTE**

If hard drive contains classified data, handle in accordance with AFSSI 5100.

g. If classified hard drive is installed, remove it. Refer to paragraph 5.4.3.1 REMOVAL OF HARD DRIVE, otherwise proceed to paragraph 5.4.1.2 to continue.

5.4.1.2 Replacement of Pen Tablet. Perform the following:

a. Refer to paragraph 2.3 PFPS SYSTEM INSTALLATION SEQUENCE to setup Pen Tablet.

b. If a classified hard drive was removed, install it. Refer to paragraph 5.4.3.2 REPLACEMENT OF HARD DRIVE.

5.4.2 Removal and Replacement of Mini-Dock Station. Perform the following remove and replace procedures.

5.4.2.1 Removal of Mini-Dock Station. Perform the following:

a. Shutdown Pen Tablet system, refer to paragraph 4.2.4 SYSTEM SHUTDOWN PROCEDURE.

b. Lift Pen Tablet off of Mini-Dock station.

c. Disconnect all cables from Mini-Dock station.

d. Set Mini-Dock station aside.

5.4.2.2 Replacement of Mini-Dock Station. Perform the following:

a. Refer to paragraph 2.3.2 SYSTEM INSTALLATION WITH MINI_DOCK STATION to setup Mini-Dock station.

b. If required, power-up Pen Tablet assembly. Refer to paragraph 4.1 SYSTEM POWERUP.

5.4.3 Removal and Replacement of Hard Drive. Perform the following remove and replace procedures.

5.4.3.1 Removal of Hard Drive. Perform the following:

**NOTE**

- Mission Planning Data may need to be backed-up prior to performing the following procedures. Contact the system administrator.
- Pen Tablet must be removed from the Mini-Dock station to access hard drive cover.

a. If required, shutdown Pen Tablet system, refer to paragraph 4.2.4 SYSTEM SHUTDOWN PROCEDURE.

b. If required, disconnect all cables attached to the Pen Tablet.

c. Remove hard drive as follows:

(1) Place Pen Tablet face down on a flat working surface.

(2) Before removing hard drive, unlock and remove battery pack, refer to paragraph 5.4.8.1 REMOVAL OF BATTERY PACK.

(3) Set battery pack aside.

(4) Remove two screws that hold hard drive cover. Set screws aside. Refer to Figure 16.

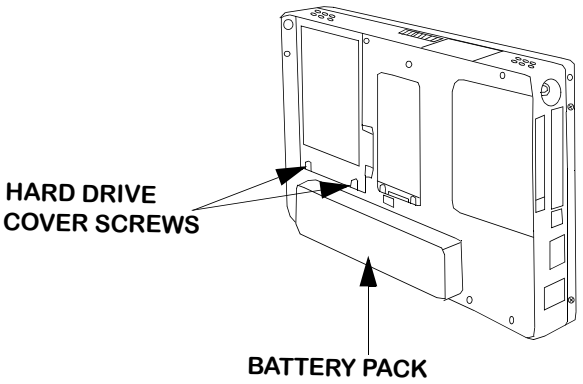


*Figure 16 Pen Tablet (Rear View)*

(5) Slide hard drive cover outward.

(6) Lift hard drive cover and set aside.

(7) Carefully insert a thin, flat object under corner of connector and lift up to remove from connector slot, refer to Figure 17.

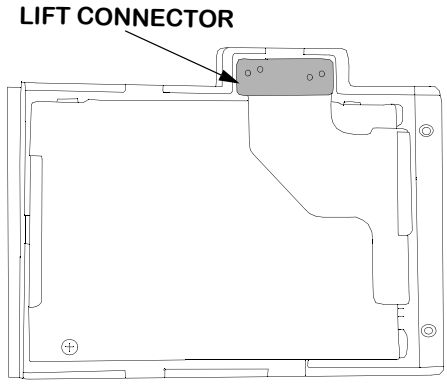


*Figure 17 Hard Drive Lift Tab*

(8) Using connector, carefully lift hard drive to remove it from Pen Tablet assembly.

**NOTE**

If hard drive contains classified data, handle in accordance with AFSSI 5100.

(9) Set hard drive aside.

5.4.3.2 Replacement of Hard Drive. Perform the following:

a. Replace hard drive as follows:

(1) If required, remove two screws that hold hard drive cover. Set screws aside.

(2) Slide hard drive cover outward.

(3) Lift hard drive cover and set aside.

(4) Carefully insert a thin, flat object under corner of orange connector and lift up to remove hard drive ribs from connector slot, refer to Figure 17.

(5) Using orange connector, carefully lift hard drive to remove it from Pen Tablet assembly.

(6) Set Pen Tablet aside.

**NOTE**

If hard drive contains classified data, handle in accordance with AFSSI 5100.

(7) Remove screw from sleeve, refer to Figure 18.

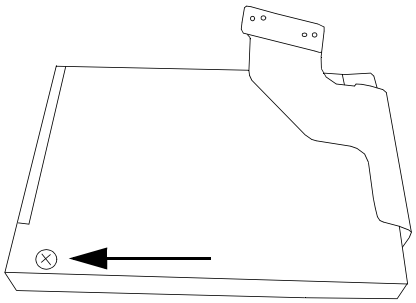

*Figure 18 Hard Drive in Protective Sleeve*

(8) Slide hard drive out of sleeve, refer to Figure 19.

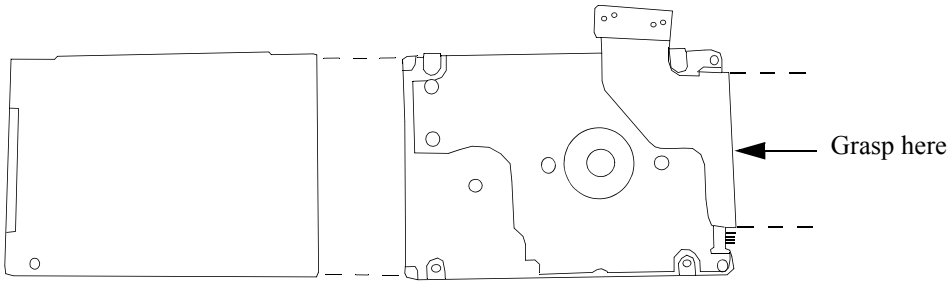


*Figure 19 Protective Sleeve and Hard Drive Disassembled*

(9) Carefully grasp the connector/hard drive assembly on both sides (refer to Figure 19), and gently pull connector from hard drive. Set hard drive aside.

(10) Locate replacement hard drive and carefully place connector on pins, refer to Figure 19.

(11) Slide hard drive into sleeve, refer to Figure 19.

(12) Locate and install screw into hard drive sleeve.

(13) Carefully place hard drive into hard drive bay.

(14) Carefully insert hard drive ribs into connector slot and push downward until locked in place, refer to Figure 15.

(15) Replace hard drive cover and slide inward.

**CAUTION**

Ensure screws are set straight into the holes. Do not try to tighten the screws if they are angled into the holes. If the screws do not tighten easily, remove them and try again. Do not overtighten the screws. Failure to observe this caution may cause equipment damage.

(16) Install two screws and tighten until snug.

b. Locate battery pack and slide into Pen Tablet assembly until it clicks in place, refer to paragraph 5.4.8.2 REPLACEMENT OF BATTERY PACK.

c. Reinstall Pen Tablet into Mini-Dock station if required.

d. Connect all cables as required to Pen Tablet assembly or Mini-Dock station. Refer to Figure 5 through Figure 7.

e. To restore system, refer to paragraph 5.2.3 OPERATING SYSTEM FAILURE.

5.4.4 Removal and Replacement of External Floppy Drive. Perform the following remove and replace procedures.

5.4.4.1 Removal of External Floppy Drive. Shutdown Pen Tablet system, refer to paragraph 4.2.4 SYSTEM SHUTDOWN PROCEDURE.

a. Disconnect floppy drive cable from Mini-Dock station, refer to Figure 6.

b. Set floppy drive aside.

5.4.4.2 Replacement of External Floppy Drive. Perform the following:

a. Locate floppy drive.

b. Connect floppy drive cable to Mini-Dock station, refer to Figure 6.

c. If required, start-up the Pen Tablet system. Refer to paragraph 4.1 SYSTEM POWERUP.

5.4.5 Removal and Replacement of External CD-ROM Drive. Perform the following remove and replace procedures.

5.4.5.1 Removal of External CD-ROM. Perform the following:

a. Shutdown Pen Tablet system, refer to paragraph 4.2.4 SYSTEM SHUTDOWN PROCEDURE.

**NOTE**

When disassembled, the CD-ROM drive consists of three components: PCMCIA Card, CD-ROM cable, and CD-ROM drive.

b. Eject CD-ROM Interface Card from PCMCIA card slot, refer to Figure 5.

c. Disconnect CD-ROM Interface Card from CD-ROM cable. Set Interface Card aside.

d. Disconnect CD-ROM cable from CD-ROM drive.

e. Set CD-ROM drive aside.

5.4.5.2 Replacement of External CD-ROM Drive. Perform the following:

a. Locate External CD-ROM drive.

b. Shutdown Pen Tablet system, refer to paragraph 4.2.4 SYSTEM SHUTDOWN PROCEDURE.

**NOTE**

When disassembled the CD-ROM drive consists of three components: CD-ROM Interface Card, CD-ROM cable, and CD-ROM drive.

c. Connect CD-ROM cable to rear of CD-ROM drive.

d. Connect CD-ROM cable to CD-ROM Interface Card.

e. Insert CD-ROM Interface Card into PCMCIA card slot, refer to Figure 5.

f. If required, start-up the Pen Tablet system. Refer to paragraph 4.1 SYSTEM POWERUP.

5.4.6 Removal and Replacement of Serial I/O CF Card. Perform the following remove and replace procedures.

5.4.6.1 Removal of Serial I/O CF Card. Perform the following:

a. Shutdown Pen Tablet system, refer to paragraph 4.2.4 SYSTEM SHUTDOWN PROCEDURE.

b. Eject Serial I/O CF card from Compact Flash Slot, refer to Figure 6.

c. Set Serial I/O CF card aside.

d. Insert plastic insert into Compact Flash slot.

5.4.6.2 Replacement of Serial I/O CF Card. Perform the following:

a. If required, eject plastic insert from Compact Flash slot.

b. Obtain Serial I/O CF Card.

c. Insert Serial I/O CF Card into Compact Flash slot, refer to Figure 6.

d. If required, start-up the Pen Tablet system. Refer to paragraph 4.1 SYSTEM POWERUP.

5.4.7 Removal and Replacement of Battery Charger. Perform the following remove and replace procedures.

5.4.7.1 Removal of Battery Charger. Perform the following:

a. If required, remove battery pack(s) from battery charger.

b. Set battery pack(s) aside.

c. Disconnect AC Adapter from battery pack.

d. Set AC Adapter aside.

5.4.7.2 Replacement of Battery Charger. Perform the following:

a. Locate battery charger.

b. Locate AC Adapter cord.

c. Connect AC Adapter cord to battery charger.

5.4.8 Removal and Replacement of Battery Pack. Perform the following remove and replace procedures.

5.4.8.1 Removal of Battery Pack. Perform the following:

a. If required, shutdown Pen Tablet system, refer to paragraph 4.2.4 SYSTEM SHUTDOWN PROCEDURE.

b. Locate battery pack locking latch on back of Pen Tablet assembly and simultaneously slide locking latch to the unlocked position and pull battery pack away from assembly.

c. Set battery pack aside.

5.4.8.2 Replacement of Battery Pack. Perform the following:

a. Locate battery pack.

b. Install battery pack. If required, refer to Figure 6.

c. Power on Pen Tablet system, refer to paragraph 4.1 SYSTEM POWERUP.

5.4.9 Removal and Replacement of Keyboard. Perform the following remove and replace procedures.

5.4.9.1 Removal of Keyboard. Perform the following:

a. Disconnect keyboard from USB port on Pen Tablet assembly or Mini-Dock station.

b. Set keyboard aside.

5.4.9.2 Replacement of Keyboard. Perform the following:

**NOTE**

Pen Tablet assembly will only accept a USB port keyboard.

a. Locate keyboard.

b. Connect keyboard to USB port on Pen Tablet assembly or Mini-Dock station.

c. If required, start-up the Pen Tablet system. Refer to paragraph 4.1 SYSTEM POWERUP.

5.4.10 Removal and Replacement of Slip Case. Perform the following remove and replace procedures.

5.4.10.1 Removal of Slip Case. Perform the following:

a. Shutdown Pen Tablet system, refer to paragraph 4.2.4 SYSTEM SHUTDOWN PROCEDURE.

b. Eject Serial I/O CF card from slot, refer to Figure 2.

c. Set Serial I/O CF card aside.

d. Insert plastic insert into Compact Flash slot.

e. Disconnect power cable from DC input connector, refer to Figure 2.

f. Open velcro covering wire harness. Loosen leather strap and set harness aside.

g. Open remaining velcro restraints and tie down straps.

h. Set Pen Tablet and Slip Case aside.

5.4.10.2 Replacement of Slip Case

a. Locate replacement Slip Case.

b. Carefully slide Pen Tablet assembly into new slip case, refer to Figure 20.

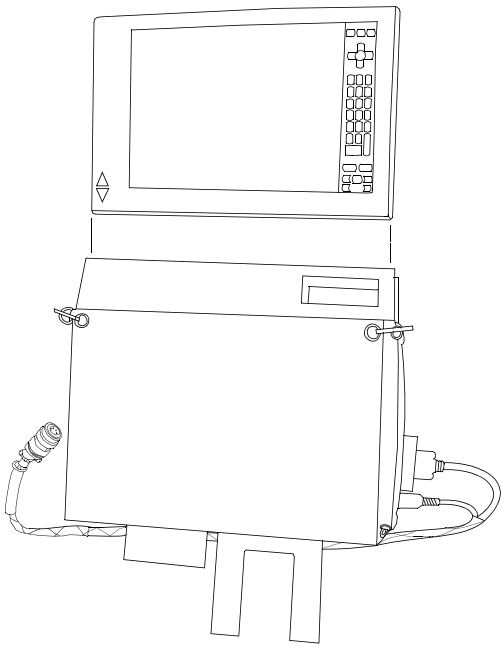

*Figure 20 Pen Tablet and Updated Slip Case Version II*

c. Secure velcro and tie down straps.

d. Eject plastic insert from Compact Flash slot.

e. Set plastic insert aside.

f. Retrieve wire harness and slip Serial I/O CF card into Compact Flash Slot.

g. Connect power cable to DC input connector, refer to Figure 21.

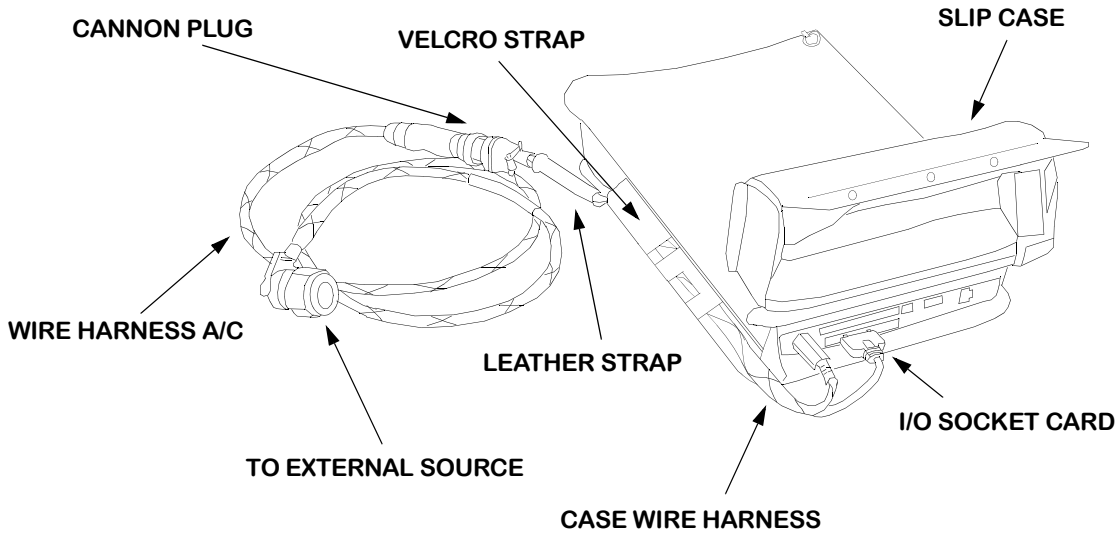


*Figure 21 Pen Tablet Within Slip Case Version 2*

h. Secure wire harness with velcro and leather strap.

i. If required, start-up the Pen Tablet system. Refer to paragraph 4.1 SYSTEM POWERUP.

5.4.11 Removal and Replacement of Interconnection Cables, Power Cords and Miscellaneous Items. Perform the following remove and replace procedures.

5.4.11.1 Removal. Perform the following:

a. Power down Pen Tablet, refer to paragraph 4.2.4 SHUTDOWN PROCEDURE.

b. Remove fault item, refer to Figure 22 through Figure 27.

5.4.11.2 Replacement. Perform the following:

a. Install replaced item, refer to Figure 22 through Figure 27.

b. If required, power-up Pen Tablet assembly. Refer to paragraph 4.1 SYSTEM POWERUP.

5.5 General Service and Repair of PFPS. Perform general service and repairs as follows:

5.5.1 Cleaning. Perform the following to clean Pen Tablet and external devices:

5.5.1.1 Pen Tablet Cleaning. Included with the Pen Tablet system a 3M cloth that has been provided to wipe the screen.

**CAUTION**

- Do not use benzene or thinner, or disinfectant-type alcohol. Failure to comply with this caution can cause permanent surface damage.
- Do not directly use water, liquid detergents or spray-type cleaners. Failure to comply with this caution may cause the Pen Tablet to malfunction or become defective.

5.5.1.1.1 Cleaning All Areas Excluding LCD. Wipe these areas with a soft cloth, after applying water or detergent diluted with water to the soft cloth and then thoroughly wrung.

5.5.2 Label Marking and Replacement. PFPS system components do not require label marking.

5.6 Performance Tests. The following paragraph describe the performance test that may be performed on the PFPS.

5.6.1 Pen Tablet POST. The computer runs a POST that is a limited check on the condition of the computer hardware, refer to On-line Reference Manual.

## 6. SHIPMENT

This section contains procedures that are required to prepare the PFPS for shipment or deployment.

6.1 Shutdown. To shutdown the PFPS system, refer to paragraph 4.2.4 SHUTDOWN PROCEDURE.

**CAUTION**

Disconnect DC Power Connector and I/O Socket card from Pen Tablet as referenced in Figure 2. Failure to observe this caution may cause equipment damage.

6.2 Packing. Perform the following instructions to prepare the system for shipment or deployment.

**CAUTION**

Damage to equipment may occur if dropped from a height of more than 24 inches. Damage to equipment may occur if subjected to vibration in shipment exceeding that normally experienced by common carrier trucks and tractor trailers on interstate highways.

a. Locate cardboard box and shipping material.

6.2.1 Power Cords and Interconnecting Cables. Disconnect power cords and interconnecting cables and store in cardboard box.

6.2.2 Documentation. Perform the following:

a. Locate all documentation and store with individual hardware components.

b. Perform inventory of all equipment prior to packing and returning to shipping container.

6.2.3 Pen Tablet. Prepare the Pen Tablet for storage as follows:

**NOTE**

- Battery pack can be left in Pen Tablet when stored.
- If hard drive contains classified data, handle in accordance with AFSSI 5100.

a. If a classified hard drive is installed, remove it and handle in accordance with local security procedures. Refer to paragraph 5.4.3.1 REMOVAL OF HARD DRIVE.

b. Place hard drive in a static shield storage bag and handle in accordance with AFSSI 5100.

## 7. CIRCUIT DIAGRAMS

Circuit diagrams for the PFPS are contained in this paragraph. Circuit diagrams consist of the following: functional block diagrams and interconnection diagrams. These diagrams support theory of operation, troubleshooting and repair procedures. Table 5 is a listing of the figures with title and page location.

*Table 5 List of PFPS Circuit Diagrams*

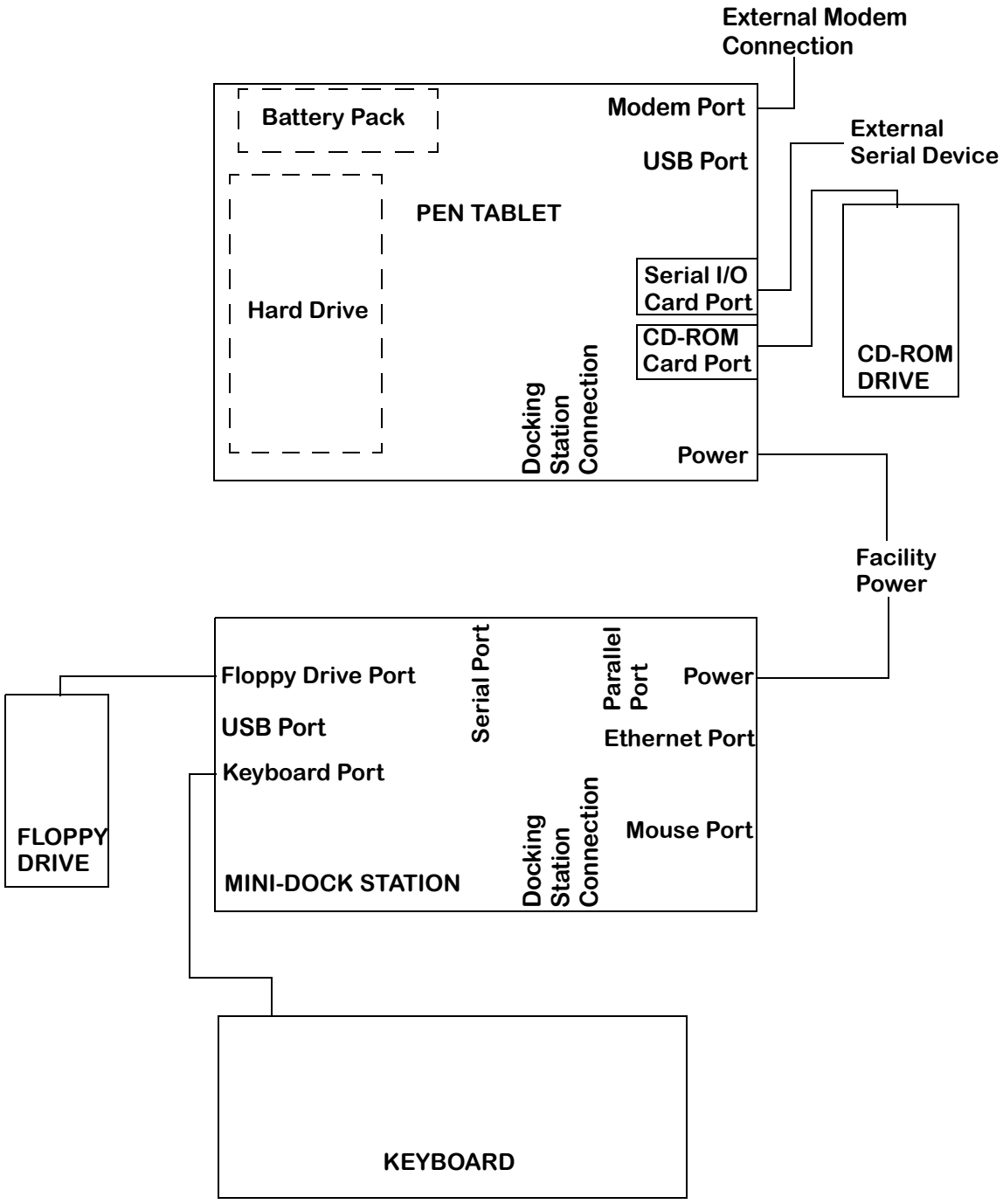


*Figure 22 PFPS Functional Block Diagram Mini-Dock Station Configuration*

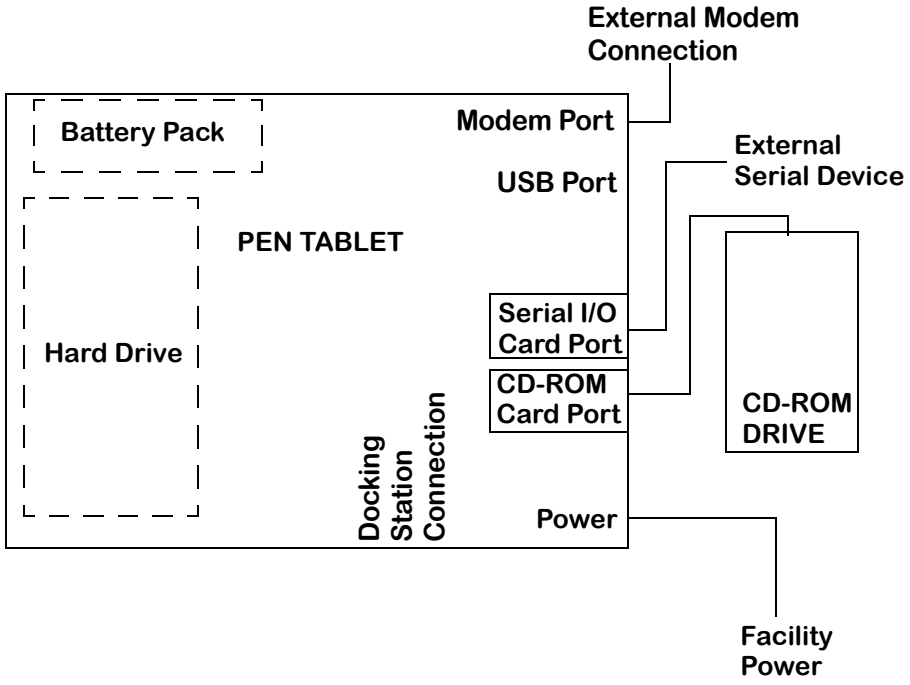


*Figure 23 PFPS Functional Block Diagram Without Mini-Dock Station Configuration*

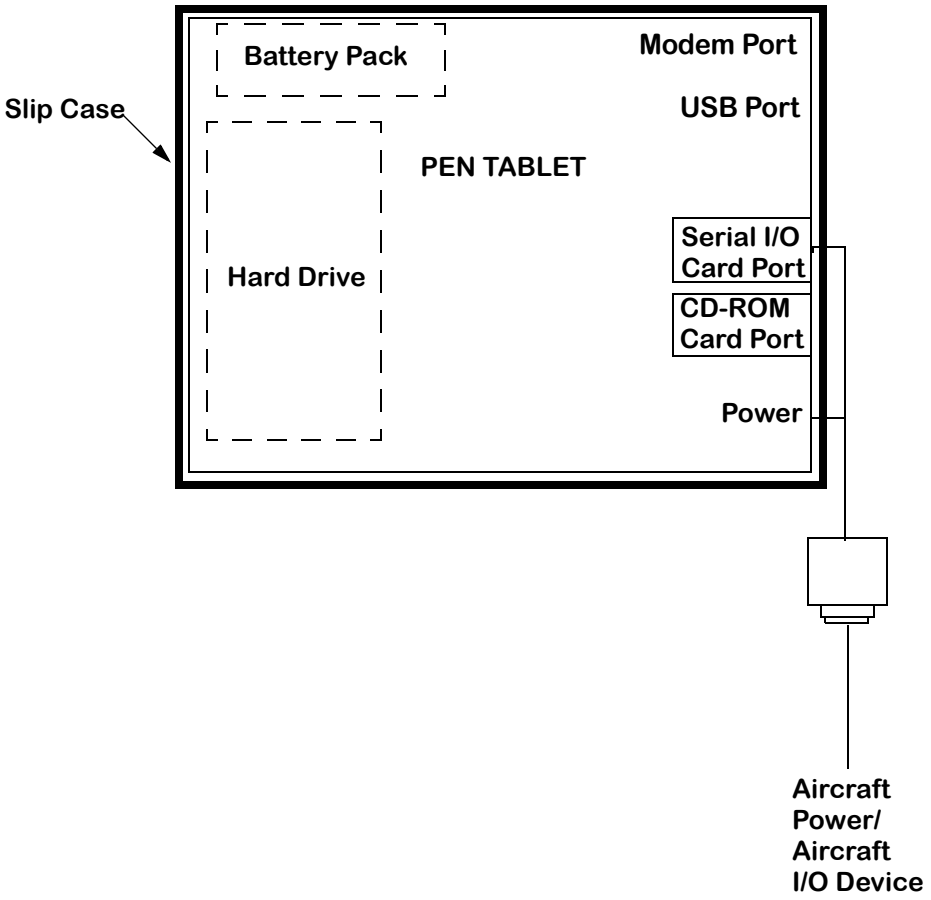


*Figure 24 PFPS Functional Block Diagram Slip Case Configuration*

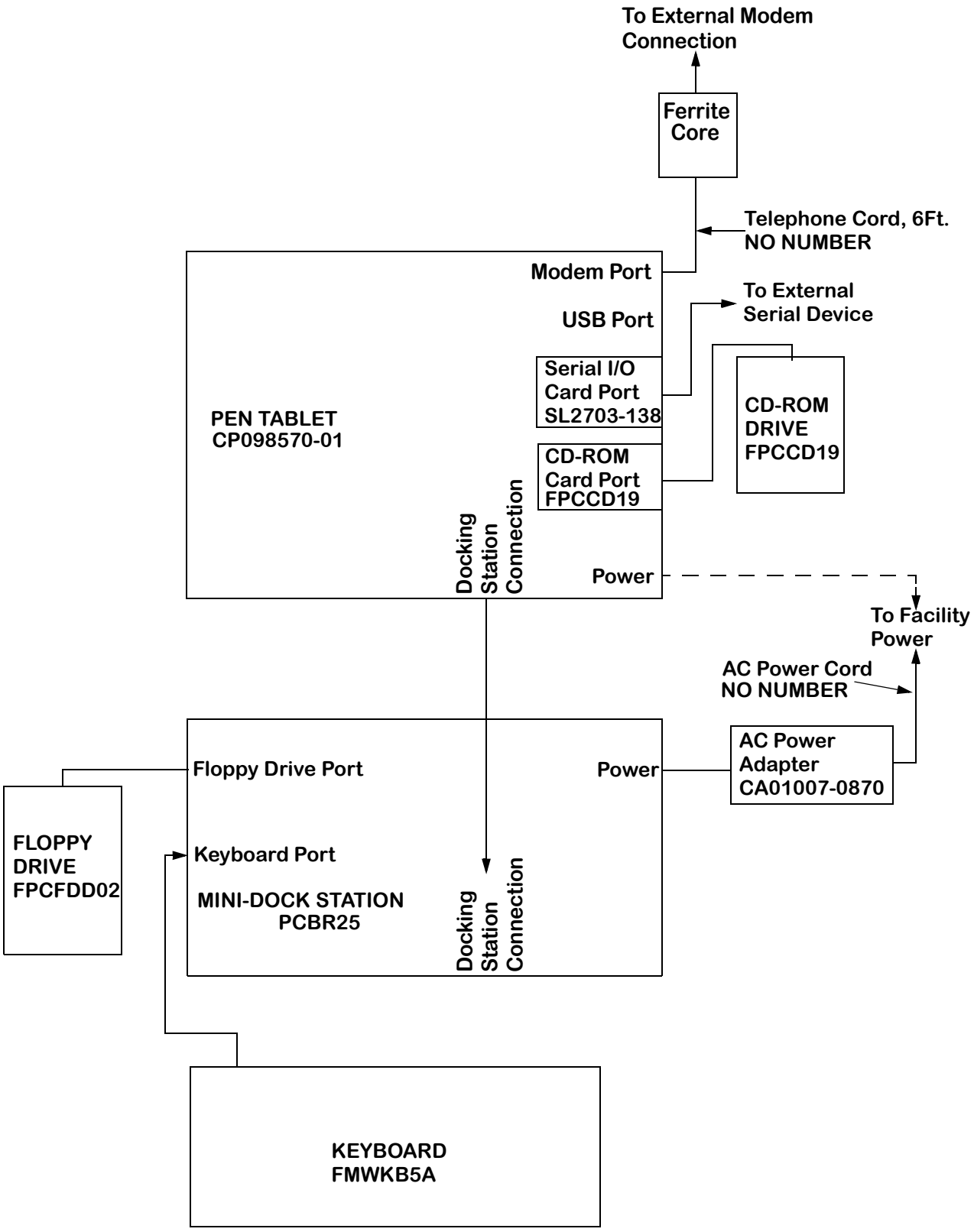


*Figure 25 PFPS Interconnect Diagram Mini-Dock Station Configuration*

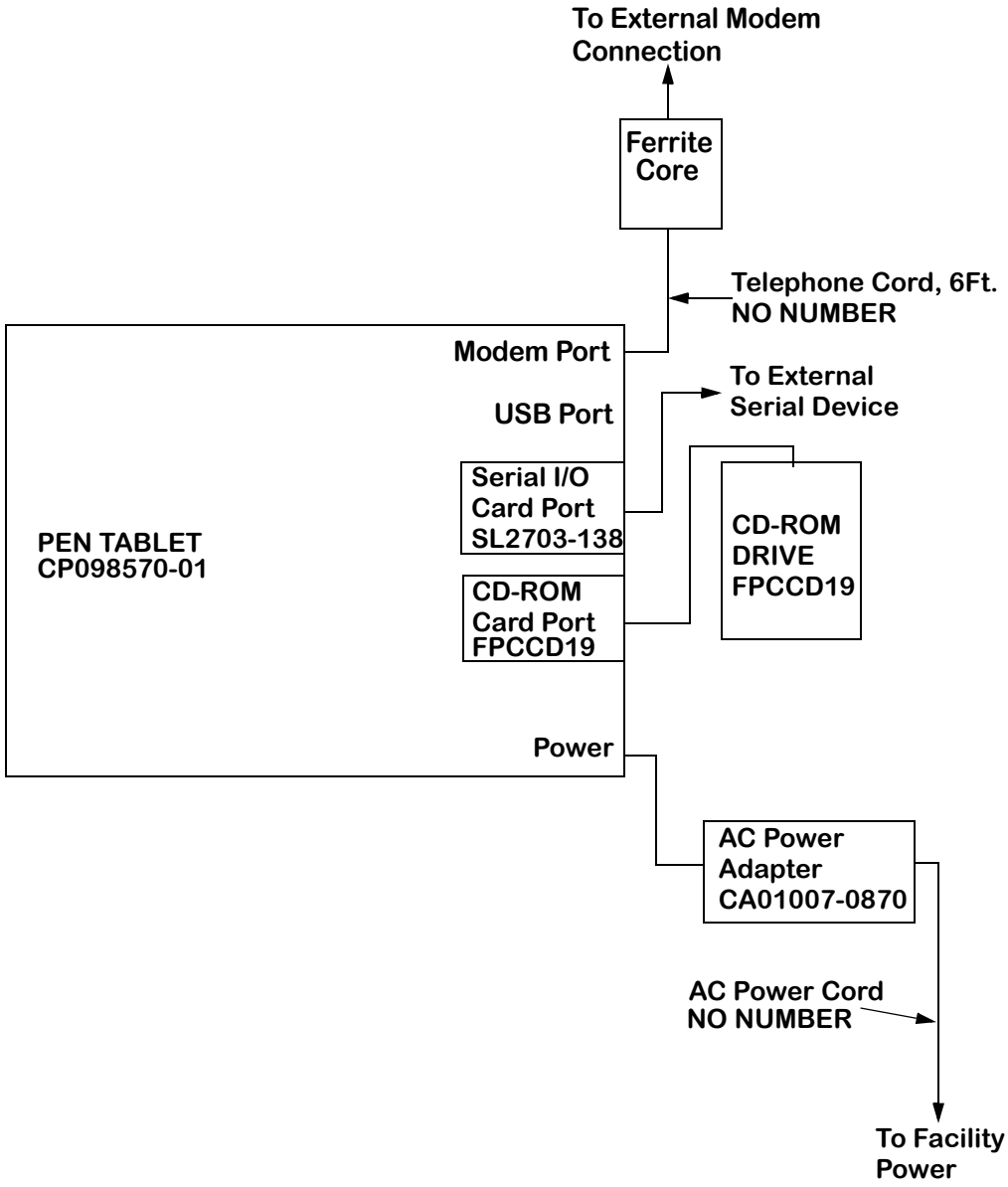


*Figure 26 PFPS Interconnect Diagram Without Mini-Dock*

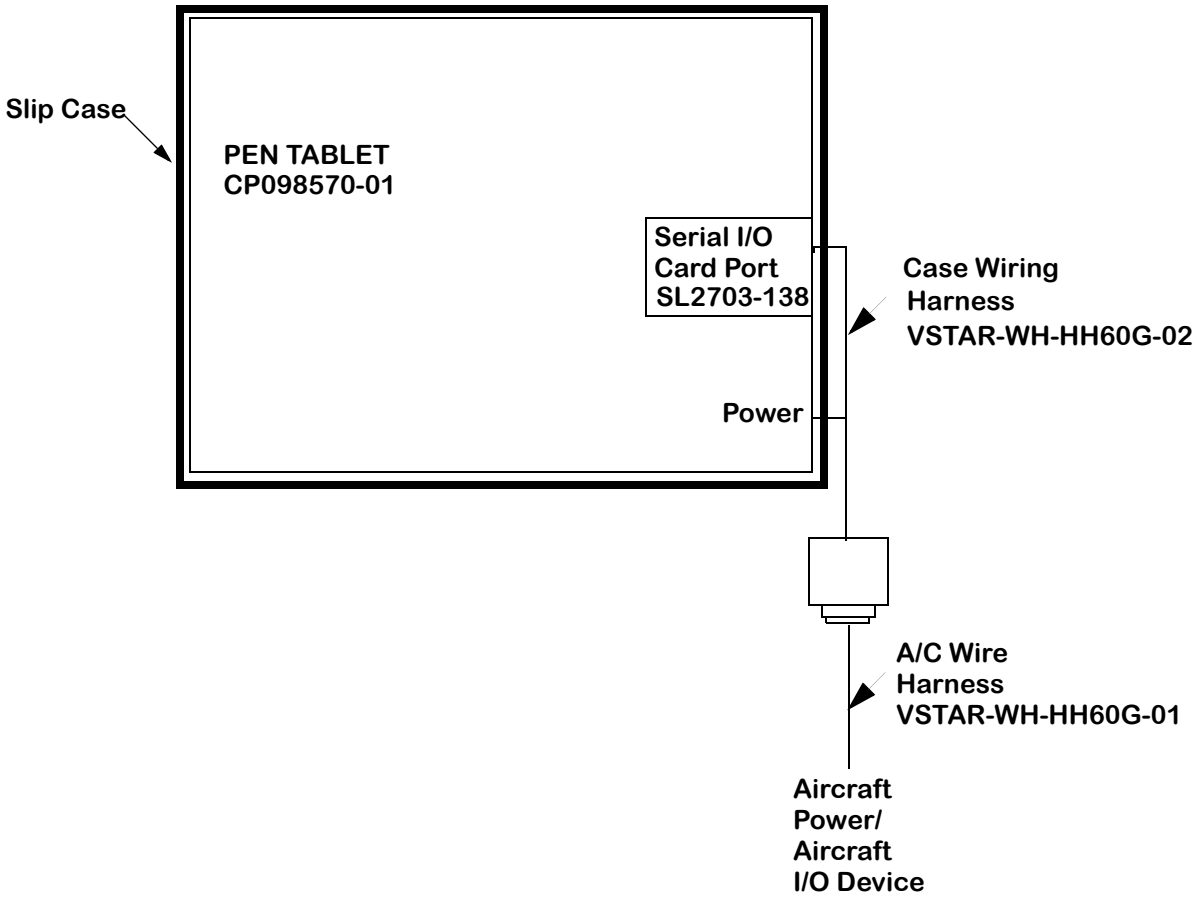


*Figure 27 PFPS Interconnect Diagram With Slip Case Configuration*